SAMSUNG

Color Laser Printer

CLP-350N

CLP-350N/XAA

Basic Model : CLP-350N

SERVICE *Manual*

Samsung Color Laser Printer

CLP-350N

The keynote of Product

High Performance /
High Quality Muti-path CLBP

- Model : only CLP 350N
- Speed(Color/Mono) : 5/20ppm(A4). 5/19ppm(Let)
- Printing resolution : 2,400 x 600 dpi
- Emulation : PCL6/PS3
- Memory expansion => Max.128MB
- Processor : 300MHz
- Interface : IEEE 802.3,Ethernet(10/100Mbps)
  Wireless: Not Supported
- Toner Cartridge :
  4K Toner(K), 2K toner(C, M, Y each)
- Printer Life : 200,000 pages
  Monthly Max. Duty : 25,000 pages/month

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1. Precautions

In order to prevent accidents and to prevent damage to the equipment please read the precautions listed below carefully before servicing the printer and follow them closely.

1.1 Safety Warning

(1) Only to be serviced by appropriately qualified service engineers.
High voltages and lasers inside this product are dangerous. This printer should only be serviced by a suitably trained and qualified service engineer.

(2) Use only Samsung replacement parts
There are no user serviceable parts inside the printer. Do not make any unauthorized changes or additions to the printer, these could cause the printer to malfunction and create electric shock or fire hazards.

(3) Laser Safety Statement
The Printer is certified in the U.S. to conform to the requirements of DHHS 21 CFR, chapter 1 Subchapter J for Class 1(1) laser products, and elsewhere, it is certified as a Class I laser product conforming to the requirements of IEC 825. Class I laser products are not considered to be hazardous. The laser system and printer are designed so there is never any human access to laser radiation above a Class I level during normal operation, user maintenance, or prescribed service condition.

Warning >> Never operate or service the printer with the protective cover removed from Laser/Scanner assembly. The reflected beam, although invisible, can damage your eyes. When using this product, these basic safety pre-cautions should always be followed to reduce risk of fire, electric shock, and injury to persons.

CAUTION - INVISIBLE LASER RADIATION □ WHEN THIS COVER OPEN. □ DO NOT OPEN THIS COVER.

VORSICHT - UNSICHTBARE LASERSTRAHLUNG, □ WENN ABDECKUNG GEÖFFNET. □ NICHT DEM STRAHL AUSSETZEN.

ATTENTION - RAYONNEMENT LASER INVISIBLE EN CAS □ D'OUVERTURE. EXPOSITION DANGEREUSE □ AU FAISCEAU.□

ATTENZIONE - RADIAZIONE LASER INVISIBILE IN CASO DI □ APERTURA. EVITARE L'ESPOSIZIONE AL □ FASCIO.

PRECAUCION - RADIACION LASER IVISIBLE CUANDO SE ABRE. □ EVITAR EXPONERSE AL RAYO.

ADVARSEL. - USYNLIG LASERSTRÅLNING VED ÅBNING, NÅR □ SIKKERHEDSBRYDERE ER UDE AF FUNKTION. □ UNDGÅ UDSAETTELSE FOR STRÅLNING.

ADVARSEL. - USYNLIG LASERSTRÅLNING NÅR DEKSEL □ ÅPNES. STIRR IKKE INN I STRÅLEN. □ UNNGÅ EKSPONERING FOR STRÅLEN.

VARNING - OSYNLIG LASERSTRÅLNING NÄR DENNA DEL □ ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. □ BETRAKTA EJ STRÅLEN. STRÅLEN ÄR FARLIG.

VARO! - AVATTAESSA JA SUOJALUKITUS OHITETTAESSA □ OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASER-□ SÄTEILYLLE ÄLÄ KATSO SÄTEESEEN.

注 意 - 严禁渴开此盖, 以免激光泄露灼伤

주 의 - 이 덮개를 열면 레이저광에 노출될 수 있으므로 주의하십시오.

1.2 Caution for safety

1.2.1 Toxic material

This product contains toxic materials that could cause illness if ingested.

Please keep toner cartridges away from children. The toner powder contained in the toner cartridge may be harmful and if swallowed you should contact a doctor.

1.2.2 Electric Shock and Fire Safety Precautions

Failure to follow the following instructions could cause electric shock or potentially cause a fire.

(1) Use only the correct voltage, failure to do so could damage the printer and potentially cause a fire or electric shock.

(2) Use only the power cable supplied with the printer. Use of an incorrectly specified cable could cause the cable to overheat and potentially cause a fire.

(3) Do not overload the power socket, this could lead to overheating of the cables inside the wall and could lead to a fire.

(4) Do not allow water or other liquids to spill into the printer, this can cause electric shock. Do not allow paper clips, pins or other foreign objects to fall into the printer these could cause a short circuit leading to an electric shock or fire hazard..

(5) Never touch the plugs on either end of the power cable with wet hands, this can cause electric shock. When servicing the printer remove the power plug from the wall socket.

(6) Use caution when inserting or removing the power connector. The power connector must be inserted completely otherwise a poor contact could cause overheating possibly leading to a fire. When removing the power connector grip it firmly and pull.

(7) Take care of the power cable. Do not allow it to become twisted, bent sharply round corners or otherwise damaged. Do not place objects on top of the power cable. If the power cable is damaged it could overheat and cause a fire or exposed cables could cause an electric shock. Replace a damaged power cable immediately, do not reuse or repair the damaged cable. Some chemicals can attack the coating on the power cable, weakening the cover or exposing cables causing fire and shock risks.

(8) Ensure that the power sockets and plugs are not cracked or broken in any way. Any such defects should be repaired immediately. Take care not to cut or damage the power cable or plugs when moving the machine.

(9) Use caution during thunder or lightening storms. Samsung recommend that this machine be disconnected from the power source when such weather conditions are expected. Do not touch the machine or the power cord if it is still connected to the wall socket in these weather conditions.

(10) Avoid damp or dusty areas, install the printer in a clean well ventilated location. Do not position the machine near a humidifier. Damp and dust build up inside the machine can lead to overheating and cause a fire.

(11) Do not position the printer in direct sunlight. This will cause the temperature inside the printer to rise possibly leading to the printer failing to work properly and in extreme conditions could lead to a fire.

(12) Do not insert any metal objects into the machine through the ventilator fan or other part of the casing, it could make contact with a high voltage conductor inside the machine and cause an electric shock.

1.2.3 Handling Precautions

The following instructions are for your own personal safety, to avoid injury and so as not to damage the printer

(1) Ensure the printer is installed on a level surface, capable of supporting its weight. Failure to do so could cause the printer to tip or fall.
(2) The printer contains many rollers, gears and fans. Take great care to ensure that you do not catch your fingers, hair or clothing in any of these rotating devices.
(3) Do not place any small metal objects, containers of water, chemicals or other liquids close to the printer which if spilled could get into the machine and cause damage or a shock or fire hazard.
(4) Do not install the machine in areas with high dust or moisture levels, beside on open window or close to a humidifier or heater. Damage could be caused to the printer in such areas.
(5) Do not place candles, burning cigarettes, etc. on the printer, these could cause a fire.

1.2.4 Assembly / Disassembly Precautions

Replace parts carefully, always use Samsung parts. Take care to note the exact location of parts and also cable routing before dismantling any part of the machine. Ensure all parts and cables are replaced correctly. Please carry out the following procedures before dismantling the printer or replacing any parts.

(1) Check the contents of the machine memory and make a note of any user settings. These will be erased if the mainboard is replaced.
(2) Ensure that power is disconnected before servicing or replacing any electrical parts.
(3) Disconnect printer interface cables and power cables.
(4) Only use approved spare parts. Ensure that part number, product name, any voltage, current or temperature rating are correct.
(5) When removing or re-fitting any parts do not use excessive force, especially when fitting screws into plastic.
(6) Take care not to drop any small parts into the machine.
(7) Handling of the OPC Drum
- The OPC Drum can be irreparably damaged if it exposed to light.
  Take care not to expose the OPC Drum either to direct sunlight or to fluorescent or incandescent room lighting. Exposure for as little as 5 mins can damage the surface's photoconductive properties and will result in print quality degradation. Take extra care when servicing the printer. Remove the OPC Drum and store it in a black bag or other lightproof container. Take care when working with the covers(especially the top cover) open as light is admitted to the OPC area and can damage the OPC Drum.
- Take care not to scratch the green surface of OPC Drum Unit.
  If the green surface of the Drum Cartridge is scratched or touched the print quality will be compromised.

1.2.5 Disregarding this warning may cause bodily injury

(1) Be careful with the high temperature part.
The fuser unit works at a high temperature. Use caution when working on the printer. Wait for the fuser to cool down before disassembly.

(2) Do not put finger or hair into the rotating parts.
When operating a printer, do not put hand or hair into the rotating parts (Paper feeding entrance, motor, fan, etc.). If do, you can get harm.

(3) When you move the printer.
This printer weighs 14.8kg including Consumables. Use safe lifting and handling techniques. Back injury could be caused if you do not lift carefully.

(4) Ensure the printer is installed safely.
The printer weighs 14.8Kg, ensure the printer is installed on a level surface, capable of supporting its weight. Failure to do so could cause the printer to tip or fall possibly causing personal injury or damaging the printer.

(5) Do not install the printer on a sloping or unstable surface. After installation, double check that the printer is stable.

1.3 ESD Precautions

Certain semiconductor devices can be easily damaged by static electricity. Such components are commonly called “Electrostatically Sensitive (ES) Devices”, or ESDs. Examples of typical ESDs are: integrated circuits, some field effect transistors, and semiconductor “chip” components.

The techniques outlined below should be followed to help reduce the incidence of component damage caused by static electricity.

Caution >>Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

1. Immediately before handling a semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, employ a commercially available wrist strap device, which should be removed for your personal safety reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ESDs, place the assembly on a conductive surface, such as aluminum or copper foil, or conductive foam, to prevent electrostatic charge buildup in the vicinity of the assembly.
3. Use only a grounded tip soldering iron to solder or desolder ESDs.
4. Use only an “anti-static” solder removal device. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ESDs.
5. Do not use Freon-propelled chemicals. When sprayed, these can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective packaging until immediately before installing it. Most replacement ESDs are packaged with all leads shorted together by conductive foam, aluminum foil, or a comparable conductive material.
7. Immediately before removing the protective shorting material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
8. Maintain continuous electrical contact between the ESD and the assembly into which it will be installed, until completely plugged or soldered into the circuit.
9. Minimize bodily motions when handling unpackaged replacement ESDs. Normal motions, such as the brushing together of clothing fabric and lifting one’s foot from a carpeted floor, can generate static electricity sufficient to damage an ESD.

2. Product specification and feature

2.1 Product Specifications

2.1.1 Product Overview

Item	Descriptions
Basic Model	CLP-350N
Maket of Sales	· Main Target : Reseller · Black only Function(Saving money)
Main Specification	1.Speed · Up to 20 ppm in A4 (19 ppm in Letter) · Up to 5 ppm in A4 (5 ppm in Letter) 2.Printing Resolution · Native 600 x 600 dpi standard 3.Processor · CHORUSm (300Mhz), Proprietary SOC 4.Printer Language Emulations · SPL-Color, PCL6, PS3 5.Memory · The controller has 128 MB SDRAM and 16 MB flash ROM on Board 6.Interfaces · One USB port · One 10/100 BaseT network connector 7.Control Panel · No LCD, 1 keys and 5 LEDs

Item(s)	Pages Printed	Part number	Remark
Black toner cartridge	Approx. Initial : 4,000 pages* Sales : 4,000 pages*	CLP-K350A	User Replacement
Color toner cartridges	Approx. 2000 pages*	CLP-C350A : Cyan CLP-M350A : Magenta CLP-Y350A : Yellow	
Imaging unit	Approx. 20,000 black pages or approx. 12,500 color pages	CLP-R350A	
Waste toner container	Approx. 5,000 images** or Approx. 1,250 pages (fulll color Std. ISO 19752 image)	CLP-W350A	
Pick-up roller	Approx. 50,000 pages	Contact a service representative	Engineer Replacement
Fuser unit	Approx. 80,000 black pages or 40,000 color pages		
T2 roller	Approx. 100,000 pages		
ITB	Approx. 100,000 black pages or 25,000 color pages		

* Average A4-/letter-sized page count based on Std. ISO 19752 of individual colors on each page. Usage conditions and print patterns may cause results to vary.

** Image counts based on one color on each page. If you print documents in full color (Cyan, Magenta, Yellow, Black), the life of this item will be reduced by 25%.

2.1.2 Specifications

Specifications are correct at the time of printing. Product specifications are subject to change without notice. See below for product specifications.

2.1.2.1 General Specifications

Item		CLP-350N
Engine Speed	Simplex	Up to 20 ppm in A4 (19 ppm in Letter) Up to 5 ppm in A4 (5 ppm in Letter)
	Duplex	N/A
Warmup time		Less than 38 sec
FPOT (B&W)	From Ready	Less than 14 sec
	From Idle	Less than 48 sec
	From Coldboot	Less than 50 sec
FPOT (Color)	From Ready	Less than 24 sec
	From Idle	Less than 58 sec
	From Coldboot	Less than 60 sec
Resolution	Optical	600 x 600 dpi
	Support	MAX: 2400 x 600 dpi effective output, 1200 x 600 dpi (default), 600 x 600 dpi(Color & B&W)

2.1.2.2 Controller & S/W

Item		CLP-350N
MPU		Samsung CHORUSm 300MHz
Memory	Std.	128 MB
	Max.	256 MB
Memory Expansion		128 MB
Printer Languages		SPL-C (Samsung Printer Language Color)
Fonts		45 Scalable, 1 Bitmap, 136 Postscript3
Driver	Supporting OS	Windows 2000/XP/2003/Vista/98/Me/NT 4.0
		Various Linux OS including Red Hat 8.0~9.0, Mandrake 9.2~10.1, SuSE 8.2~9.2 and Fedora Core 1~4
		Mac OS 10.3 ,10.4
	Default Driver	SPL-C (Samsung Printer Language Color), PCL6, PS3
	Driver feature	Watermark Overlay N-up printing Poster printing Traymanual duplex Quality(1200 dpi, 1200dpi class, 600 dpi) Color mode (Color, Gray scale) Color spec. application color matiching Device color Black only status in Status monitor
	WHQL	Windows 2000/XP/2003/Vista
	Language Localization	Korean, English, French, German, Italian, Spanish, Russian, Dutch, E.Portuguese, Finish, Swedish, Norwegian, Danish, S.Chinese, T.Chinese, Polish, Hungarian, Czech
Application	RCP	USB / Network
	Smart Panel	Yes(USB / Network, Install Default)
	Network Management	Set IP, Web SyncThru 4.5 (SWS)
	SmarThru4	SmartThru 4 (Windows only)
Interface		
Parallel		N/A
USB		USB 2.0
Network		Ethernet 10/100 Base TX
Wireless		N/A
Network Interface		
Protocol		TCP/IP, DLC/LLC, IPP, SNMP
Network OS		Microsoft Windows 2000/XP/2003 Microsoft and above Driver Vista, Mac OS 10.3 or higher (TCP/IP only)Mac OS 9 available Various Linux OS including Red Hat, Caldera, Debian, Mandrake, Slackware, SuSE and Turbo Linux Novell not available

2.1.2.3 Paper Handling

Item		CLP-350N
Standard Capa.		150-sheet Semi Cassette Tray
Max. Capa.		150 sheets @ 75g/㎡
Printing	Max. Size	216 x 356mm (8.5" x 14")
	Min. Size	76 x 127 mm (3" x 5")
	Margin(T/B/L/R)	4 mm, 4 mm, 4 mm, 4 mm
Optional Cassette Tray		
Capacity		250 sheets @ 75g/㎡
Media sizes		148 x 210 mm(A4) ~ 216 x 356 mm(Legal)
Media types		Plain paper, Cotton, Colored, Preprinted, Recycled
Media weight		60 to 90g/㎡
Size sensor		N/A
User Interface		No Indicator
Sensing		Photo Sensor
Output Stacking		
Capacity	FaceUp	N/A
	FaceDown	100 sheets @ 75g/㎡
Output Full sensing		N/A
Duplex		
Supporting		Manual
Throughput		N/A
Media sizes		N/A
Media types		N/A
Media weight		N/A

2.1.2.4 Consumables

Item		CLP-350N
CRU		
No. of CRUs		6 (C/M/Y/K toner, Imaging Unit, Waste toner container) K toner cartridge: CLP-K350A C toner cartridge: CLP-C350A M toner cartridge: CLP-M350A Y toner cartridge: CLP-Y350A Imaging unit : CLP-R350A Waste toner container: CLP-W300A
Toner	Black	4,000 A4/Letter pages, at Std. ISO 19752, Semi glossy
	Color	2,000 A4/Letter pages, at Std. ISO 19752, Semi glossy
	Key	Unique, Electronic key(S-CRUM)
	Life detect	Sensor (Y)Remain % (90% : warning,100%: empty, 120% : hardstop)
Imaging Kit(OPC+Deve)	Yield	Approx. 20K black pages (or 12.5K color pages)
	Key	Unique, Electronic key(CRUM)
	Sensor	None, that would be traced via software
	Replace method	6 steps for install/replacing
Waste Toner Container	Yield	1,250 sheets (Full Color Std. ISO 19752 Image) or 5,000 images, Full Sensor
	Key	N/A
FRU		
No. of FRUs		4 (ITB, Fuser, T2 roller, Pick-up roller)
ITB	Yield	Approx. 100,000 black pages (or 25,000 color pages)
	Key	None
	Sensor	None
Fuser	Yield	80,000 sheets B&W or 40,000 sheets Color
	Key	None
T2 Roller	Yield	100,000 sheets, Replacable
	Key	None
Pick-up Roller	Yield	50,000 sheets, Replacable
	Key	None

2.1.2.5 Environment

Item		CLP-350N
Acoustic Noise Level (Sound Power/Pressure)	Printing	Less than 48.0 dBA (Color printing) Less than 49.0 dBA (B/W printing)
	Standby	Less than 35 dBA
	Sleep	Background noise level
Input Voltages		110-120 VAC, 50/60Hz
		220-240 VAC, 50/60Hz
		Power Switch
Power Consumption	Ready	Less than 80w
	AVG.	Less than 400W
	Sleep/Power Off	Less than 10W /Less than
Dimension(W x D x H)	Set	390 X 418.8 X 269.5 mm (15.4" x 16.5" x 10.6")
	Set Packing	531 X 525 X 443 mm (20.9" x 20.7" x 17.4")
Weight	Set (with consumables)	14.8 kg
	Set Packing	18.5 kg
	Consumable	3.5 kg(Imaging Unit)

2.1.2.6 Options

Item	CLP-350N
Memory	128 MB
Second Cassette	250 sheet SCF
PostScript	Built-in
Network	Built-in
Wireless Network	N/A
Hard Disk	N/A
Duplex Unit	N/A

2.1.3 Model Comparison Table

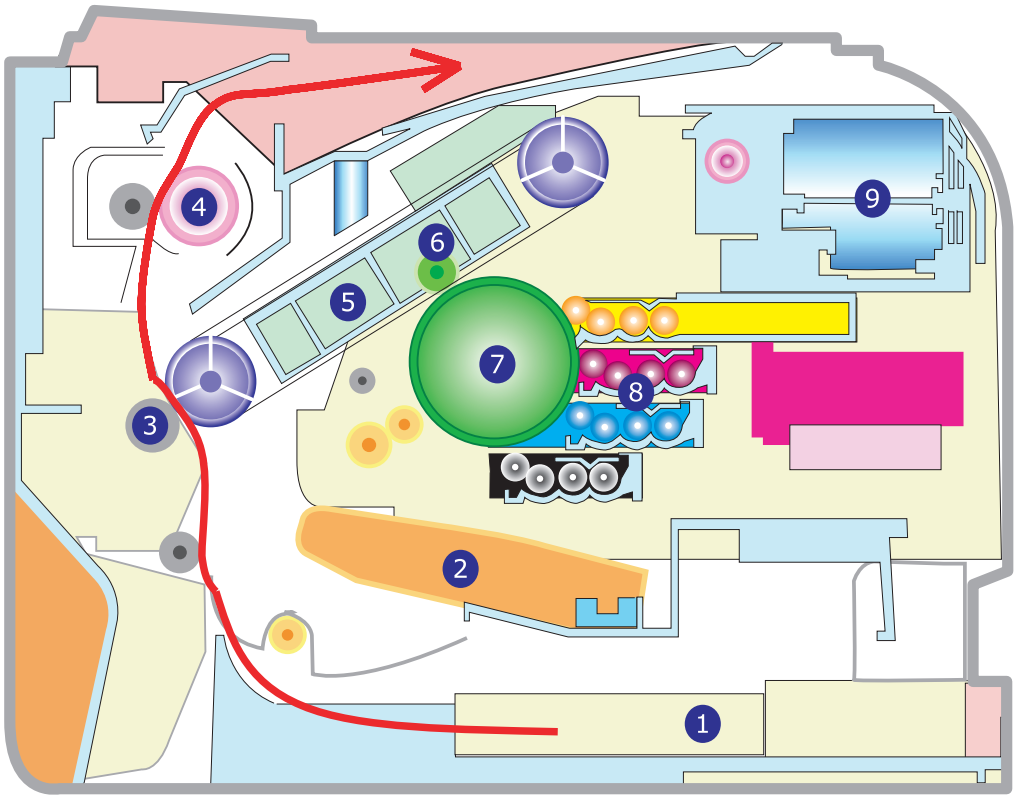
Item	Magicolor 2400W	CLP-350N
Print Method:	Electro photographic laser	Electro photographic laser
Print Speed:	5 ppm colour/ 20 ppm monochrome	5 ppm colour/ 19 ppm monochrome
Resolution:	2400 x 600 ; 1200 x 600 ; 600 x 600	2400 x 600 dpi class
First page print:	12 sec monochrome, 21 sec colour	14 sec monochrome, 24 sec colour
Warm-up time:	49 seconds	38 seconds
Processor Type:	Special ASIC 48 MHz	ChorusM 300MHz
Memory:	32 MB RAM	128 MB (expandable up to 256 MB)
Printer Emulations:	GDI	GDI, PCL6, PS3
Standard Interfaces:	USB 2.0 (High Speed) supporting MS 'Plug and Play'	USB 2.0 (High Speed) supporting MS 'Plug and Play'
OS Compatibility	Windows XP / 2000 / ME / 98 SE	Windows XP/2K/2003/ME/98/Longhorn
Standard Paper In:	200-sheet Multi-purpose Tray	150-sheet Cassette Tray
Standard Paper Out:	200-sheet Face-down Output Tray	100-sheet Face-down Output Tray
Dimensions (WxDxH):	395 x 430 x 341 (mm)	390 x 418.8 x 269.5 (mm)
Weight:	with consumables 20 kg;	with consumables 14.8 kg

2.2 System Overview

This chapter describes the functions and operating principles of the main components.

2.2.1 System Structure

2.2.1.1 Main Parts of System



1. Paper Input (Cassette)
2. LSU (Laser Scanning Unit)
3. 2nd Transfer Roller
4. Fuser
5. ITB (Intermediate Transfer Belt)
6. 1st Transfer Roller
7. OPC (Organic Photo Conductor)
8. Developers (Y, M, C, & K)
9. Toner Kits (Y, M, C, & K)

❶ Cassette

- Feeding Method : Cassette Type
- Feeding Standard : Center Loading
- Feeding Capacity : Cassette 150 Sheets(75g/㎡, 20lb Paper Standard)
  No Manual Feeder
- Paper Detecting Sensor : Photo Sensor (Empty, Registration, Exit)
- Paper Size Sensor : None

❷ LSU(Laser Scan Unit)

- Consisted of LD(Laser Diode) and Polygon Motor Control.

Error	Phenomenon
Polygon Motor Error	The Rotation of Polygon Motor can not reach stable
Hsync Error	Though the rotation of Polygon Motor reach stable, the signal of Hsync is not occurred

❸ 2nd Transfer Ass'y

- The life span: Print over 100,000 sheets (in 15~30 ℃)
- Specification: Similar to CLP-300 Series

❹ Fuser Ass'y

- Heat Lamp : New Part - Knuckle Type
- Heat Roller : Similar to CLP-500 Series
- 2 Pressure Roller : One is similar to HummingBird, the Other is a new added part comparing with other Fuser
- Thermistor - Temperature-Measuring Device
- Thermostat - Critical Temperature-Detecting Device

❺&❻ ITB(Intermediate Transfer Belt) & 1st Transfer Roller

- The life span: Print over 60,000 Images
- The ITB unit includes 1st Transfer Roller

❼&❽ OPC(Organic Photo-Conductor) & Developer

- The life span: Print over 50,000 Images (Both)
- Imagine Unit consists of 4 kinds of Developer , OPC, and Deve. Main Frame

❾ Toner Kits

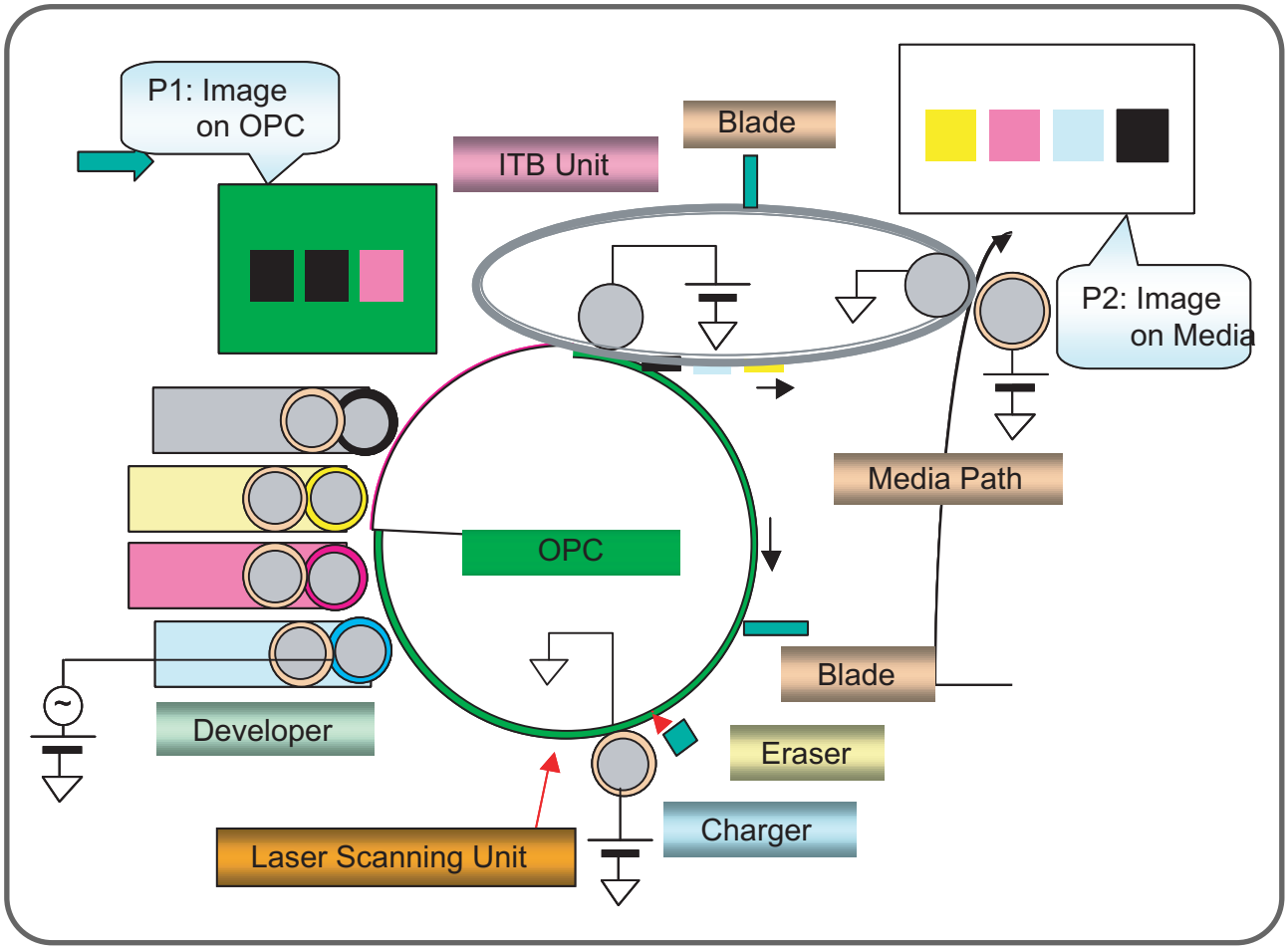
- The life span: Color -> 2000 images (Std. ISO 19752 Print-Out)
  Black -> 4000 images (Std. ISO 19752 Print-Out)

Driver Ass'y

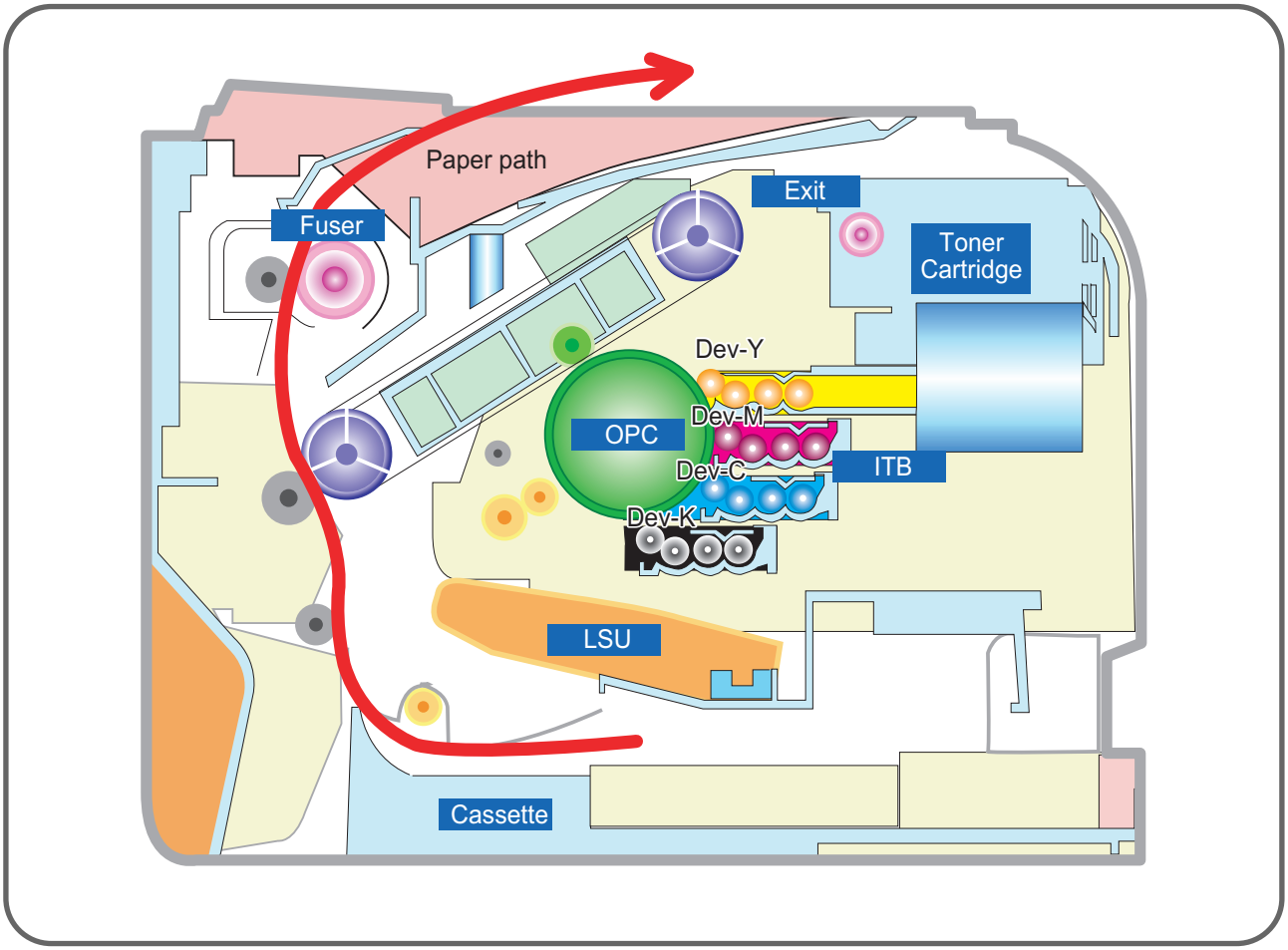
- It is a power delivery unit by gearing
- By driving the motor, it supplies the power to the feeding unit, the fusing unit, and the distributing unit.
- The Main Motor is similar to CLP-300 Series Main Motor.

2.2.1.2 EP Process

- Structure of EP Process



- System Outline



❶ Charging

- Conductive Roller charging
- Applied voltage : -1.1kV
- Charge acceptance : -520V
- OPC coating thickness : 21um
- OPC diameter : ϕ60mm
- Eraser system

1. Organic Photoconductor is charged to uniform voltage by conductive roll charging method
2. No ozone is produced because corona is not used
3. Charger roll is cleaned with cleaning roll
4. Toner remained on OPC after T1 process is cleaned by cleaning blade and retrieved into waste toner box by auger and belt driving mechanism

❷ Exposing

· One polygon motor (6 facet)
· Single beam LD (1ea)
· LD wavelength : 785nm
· Polygon motor rpm : 29685
· LSU energy : 0.25uJ/cm^2
· OPC exposed potential : -50V

1. Exposing is implemented by laser striking on to OPC with uniform potential
2. Laser beam is modulated according to image to be printed that is from PC
3. Latent Image is formed on OPC, which is developed with toner

❸ Developing

· Non-magnetic, mono component
· Non-contact development
· Developing bias : DC + AC
· AC peak to peak : 1.5 ~ 2.0kV
· Roller diameter : ϕ10mm
· Process speed ratio : 1.2 (OPC=1.0)
· Color order : Y -> M -> C -> K

1. Only latent image formed by exposing process is developed with toner
2. AC + DC Voltage is being used to develop toner into latent image on OPC because non-contact developing method is adopted
3. Y, M, C, and K Images are sequentially developed onto OPC and transferred onto Intermediate Transfer Belt (hereafter ITB) to form a color image on ITB
4. Toner Bottles are used to supply toner into developer compartment
5. Toner level is being sensed to control toner supply from toner bottle to developer

❹ Transfer 1

· Multi-pass transfer
· Indirect transfer
· Transfer voltage : 0.5 ~ 2.0kV (controllable)
· Roller diameter : ϕ14mm
· Transfer unit life : 100K images

1. Developed Image on OPC is transferred onto ITB by T1 Process
2. T1 Voltage is positive which attract toner to ITB
3. 4 times of T1 process is required to make a color image on ITB, which means multi-pass process
4. ITB has a hole as a fiducial mark for timing. Engine control for color image is synchronous with it, ITB Home Sensing Signal

❺ Transfer 2

· Indirect transfer
· Transfer voltage : 1 ~ 4.0kV (controllable)
· Roller diameter : ϕ18.6mm
· Transfer unit life : 100 K images

1. Color image formed on ITB is transferred onto media by T2 process
2. T2 voltage is also positive to get color image moved onto media
3. Toner remained on ITB after T2 process is cleaning by ITB cleaning blade and collected and
4. Transported and retrieved into waste toner box by auger and belt driving system
5. T2 Roll is engaged when color image is being transferred onto media. Otherwise it is disengaged. Clutch is used for driving T2 Roll engagement and disengagement

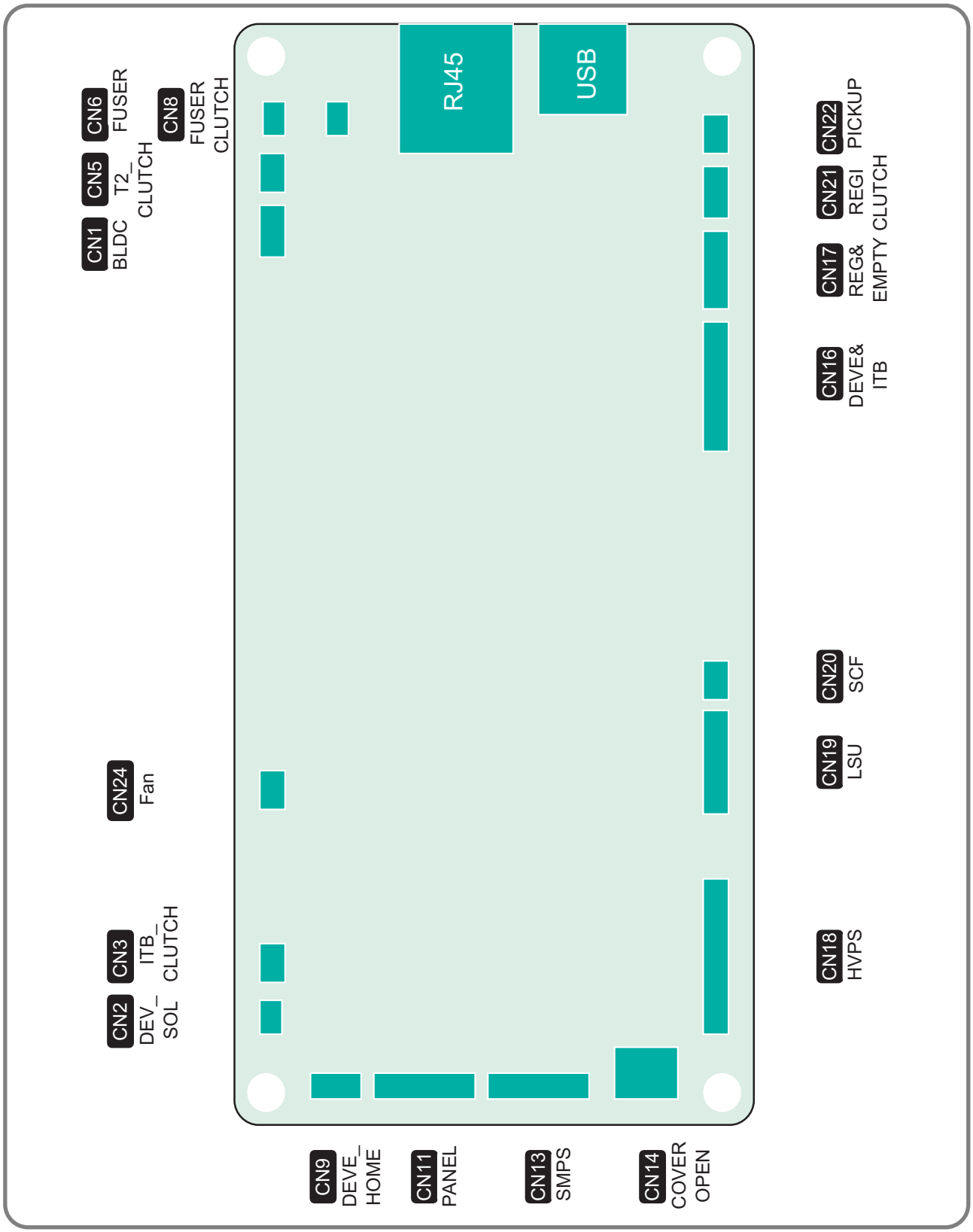
❻ Fusing

· 3 Roll system
  -> short warm-up time (38sec)
· Post Pressure Roll

1. Color Image on media is melted down and fixed into media by fusing process

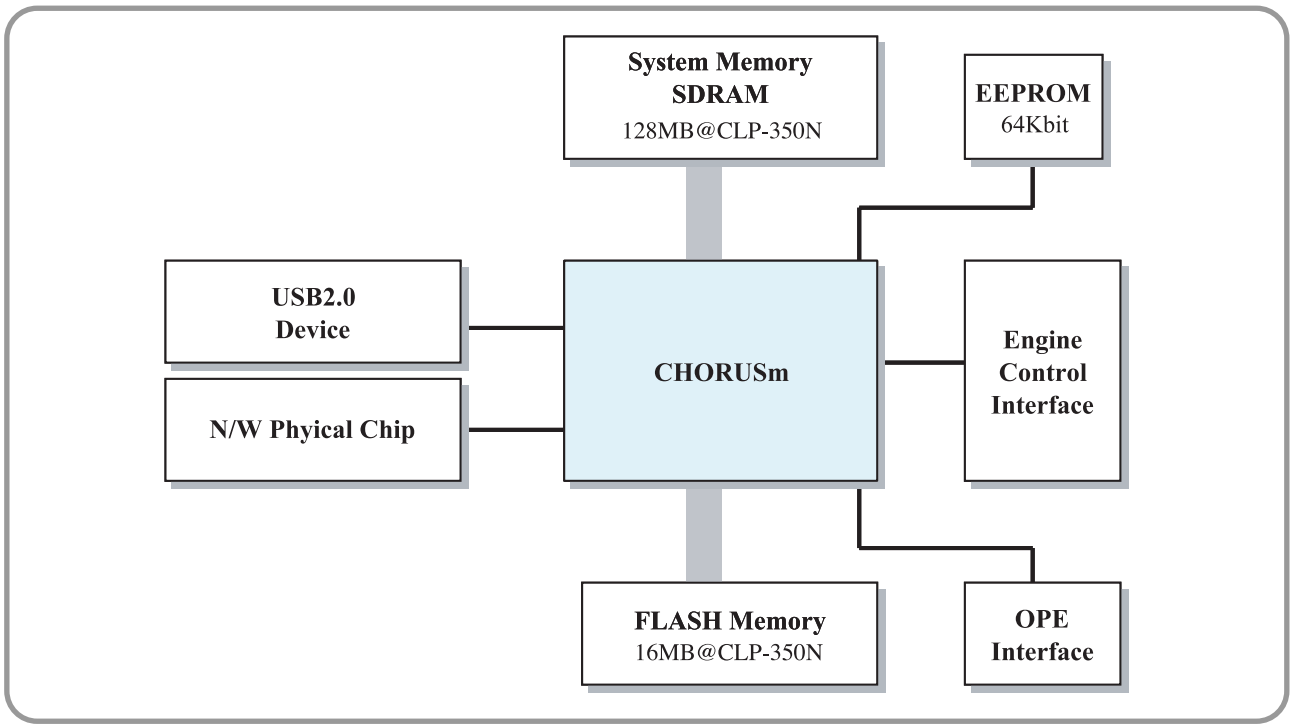
2.2.2 Main PBA Description

2.2.2.1 Main Controller PBA



2.2.2.2 Main PBA

2.2.2.3 Main PBA Description



1) CHORUSm

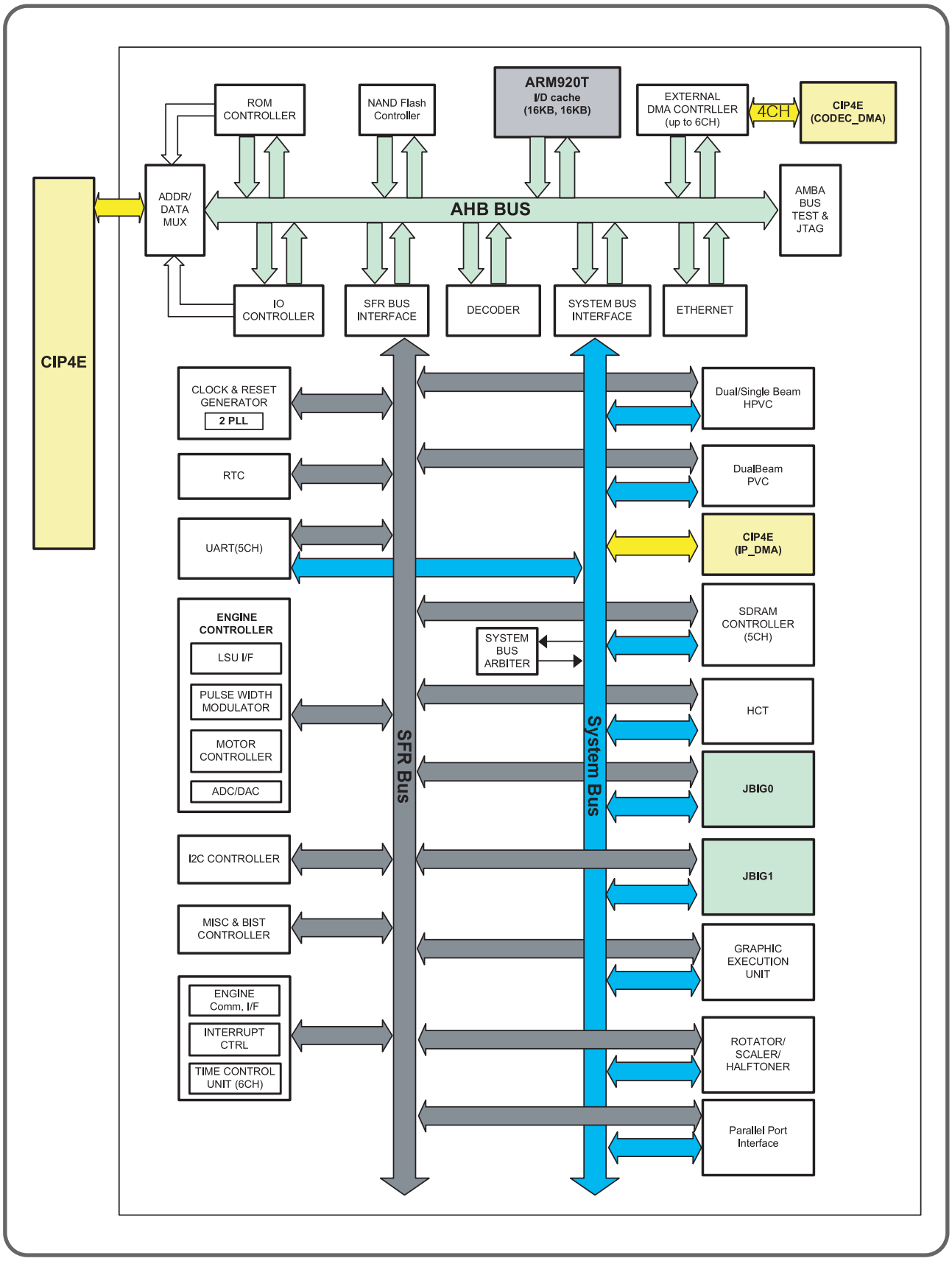
CHORUSm involves in itself the functions to control ARM Processor Core and various H/W devices. CHORUSm, therefore, controls Main PBA and all engine mechanism, processing the print job received from host and enabling the engine to print image.

≫ Function

- ▶ Process
  - · 0.13um Technology
- ▶ Package
  - · 496 PBGA
- ▶ CPU Core
  - · ARM 920T - 300MHz
  - · Cache : I-Cache 16KB, D-Cache 16KB
- ▶ System Bus
  - · 32-bit width, 100MHz
- ▶ SDRAM Controller
  - · 32-bit width, 100MHz operation
  - · 5 Banks, Up to 128MB Address space per Bank
  - · Programmable Timing to Control SDRAM A.C Characteristics
  - · Support Self Refresh for Data Retention
- ▶ ROM Controller
  - · 32-bit width, 4 Banks, Up to 16MB Address space per Bank
  - · Burst Capability
  - · Programmable Timing per Bank

- IO Controller
  - 6 Channels, Up to 16MB Address space per Bank
  - Programmable Timing per Bank
- DMA Controller
  - 6 Channels General Purpose DMA
- HPVC Controller
  - Hyper Printer Video Controller
  - High Performance DMA-based Interface to Printer Engine
  - Support Dual/Single Beam LSU, LVDS Video Output
  - Support A3, 1200dpi
- UART Controller
  - 5 Channels Indepenent Full Duplex UART
- Interrupt Controller
  - Support 6 External Interrupts
  - Support 26 Internal Interrupts
- Timer Controller
  - 6 System Timers and Watch Dog Timer for S/W Trap
- Scanner Controller
  - 300/400/600/1200dpi CIS/CCD Interface
  - Color/Mono grey image, Binary image scan support
  - 600dpi Color/Mono Copy support
  - Image Processing for High-End MFP,Digital Copier
  - MH/MR/MMR CODEC for Fax
  - Scan image : A4 1200dpi processing
  - Copy image : A4 600dpi processing
- MAC Controller
  - 10/100Mbps
  - Full IEEE 802.3 compatibility
- PPI Controller
  - IEEE1284 compliant parallel port interface
  - DMA-Based or Interrupt-Based operation
- GEU Controller
  - Graphic Engine Unit for Banding support of Printer Language
  - Scan Line Buffer, Polygon Filling
- CODEC Controller
  - 2 Channels JBIG Encoding and Decoding
- I2C Controller
  - 1 Channel, Operated at max frequency 400kHz
- RTC Controller
- Engine Controller
  - LSU Control and Interface Unit
  - 2 Channels STEP Motor Control Unit
  - 8 Channels PWM Control Unit
  - 8 Channels ADC Control Unit
  - 2 Channels DAC Control Unit

■ CHORUSm (Internal Block Diagram)



2) System Memory Block

Memory saves program and video data and print jobs received from host. Its volume is 64MB with network function.
It has separate device for 128MB extension. SDRAM is used, driven at width of 32-bit and 100MHz, and controlled by memory controller built in CHORUSm.

3) Flash Memory Block

Flash memory is the space used for saving program. Its volume is 16MB with network function. It has no separate device for extension. NOR type flash memory is used and accessed at 32-bit width burst, being controlled by the ROM controller built in CHORUSm.

4) USB2.0 Device Block

This block supports USB2.0 high speed (480Mbps). ISP1582 of Philips company is used and connected to the IO Bus of CHORUSm at 16-bit, controlled by IO controller built in CHORUSm. Through this I/O port it receives print job from host.

5) Network Block

This block has 10/100Mbps wired network function and is controlled by MAC controller built in CHORUSm. It is connected to host through physical layer chip outside, and thus receives print job from host. BCM5241 is used for physical layer chip.

6) EEPROM Block

System EEPROM is controlled by the I2C controller built in CHORUSm, connected to the other non-volatile memory on I2C bus. It works at the speed of 400KHz. This system EEPROM contains all drive information and production information necessary for the operation of printer. Its size is 64K-bit.

7) OPE Control

The panel is driven in the form of PIO by GPIO controller built in CHORUSm. OPE consists of one key and four monochrome LED, and one dual LED.

8) LSU Control

Laser Scanning Unit is controlled by LSU controller built in CHORUSm. It makes use of all functions such as Polygon Mirror Motor Control necessary for driving LSU and Synchronized Signal Generation Control, and helps to scan laser beam on the photosensitive drum to form latent image.

9) BLDC Control

It is controlled by BLDC controller built in CHORUSm. It controls the drive of printer mechanism and helps it to be
driven at an equal speed.

10) Sensors Control

GPIO controller built in CHORUSm collects the status of all sensors. According to this status of sensors, it controls printer mechanism to help normal printing. There are sensors such as Paper Empty Sensor, Registration Sensor and Developer Home Sensor, etc.

11) Clutches Control

GPIO Controller built in CHORUSm controls all clutches, which help printer to do print job normally. There are clutches such as Paper Pick-up Clutch, Registration Clutch, Developer Home Clutch, ITB Clutch, T2 Clutch, Fuser Clutch, Developer Toner Supply Clutch, etc.

12) PWM Control

PWM Controller built in CHORUSm controls the parts that require PWM for normal printing, such as BLDC drive speed and HVPS high voltage level, etc.

13) ADC Control

It is controlled by ADC Controller built in CHORUSm, and is used for perception of charged voltage and current, 1st and 2nd transfer voltage and current, fusing temperature, used-up toner and toner amount, and interior temperature, etc.

14) DAC Control

It is controlled by DAC Controller built in CHORUSm and used to set standard level of light amount of LSU Laser Diode.

2.2.2.4 SMPS(Switching Mode Power Supply) PBA

SMPS is consisted of SMPS part which supplies DC power for driving system and AC Heat Control part which supplies power to Fuser. Standard TYPE II is used.

1) DC Output

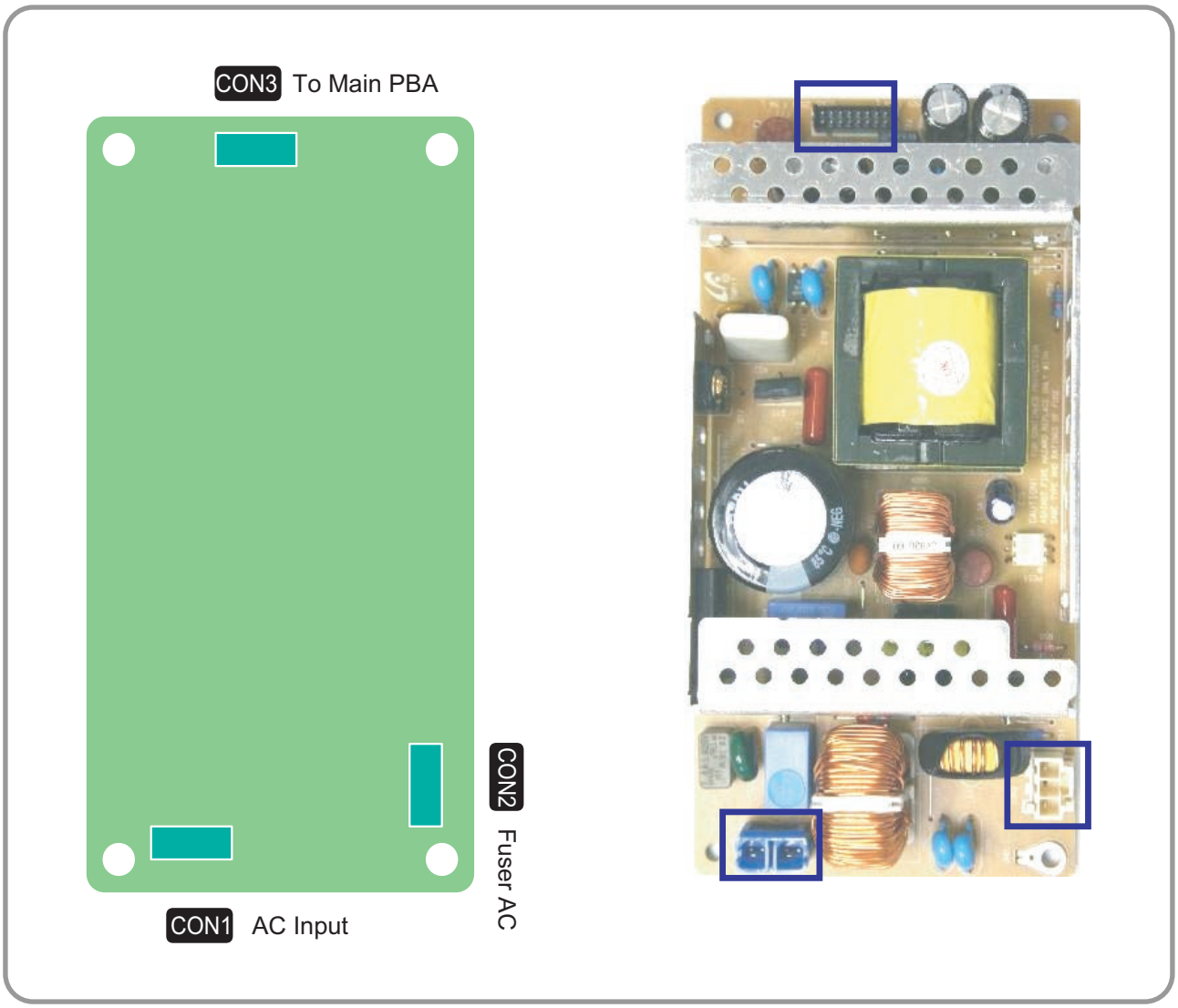
· Main Controller PBA, OP Panel, BLDC, Sensors, Clutches, Other PBAs

2) AC Output

· Fuser Unit(Heat Lamp, Thermostat)

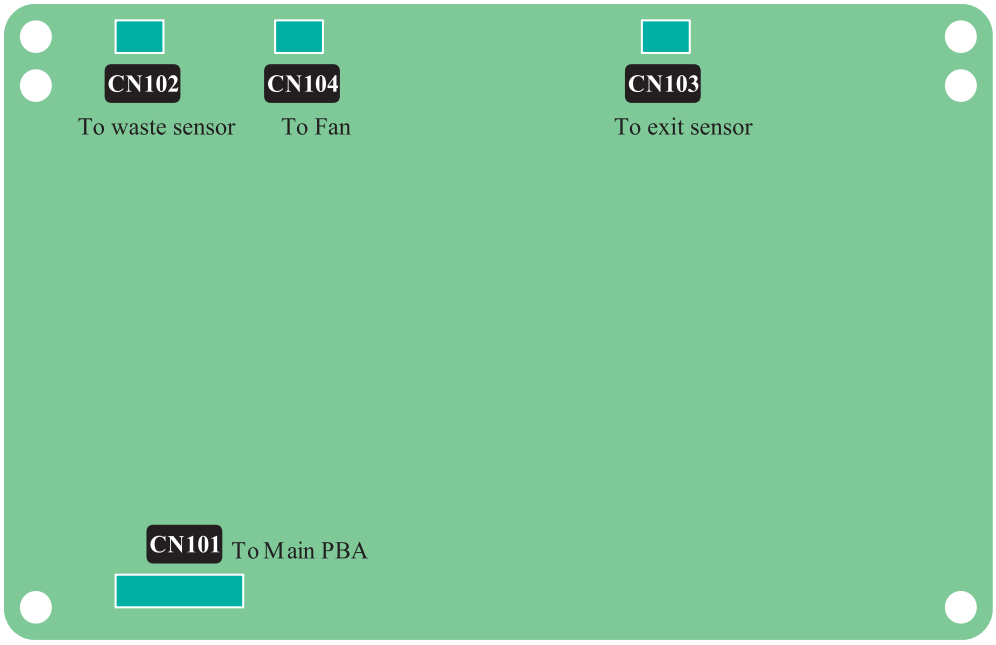
3) Output Voltage

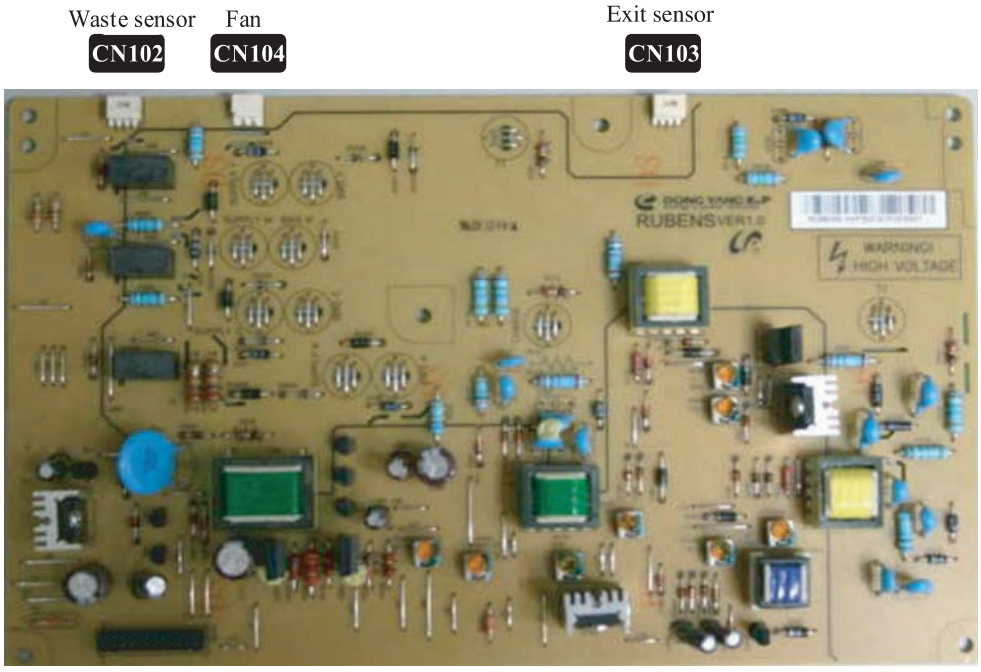
CHANNEL	+5.0V	+24V	+24VF
V_out	+5.0V +/-5%	+24.0V +15%/-10%	+24.0V +15%/-10%
Load	MicroController, CMOS, LOGIC	LSU	MOTOR, CLUTCH, HVPS



2.2.2.5 HVPS(High Voltage Power Supply) PBA

HVPS PBA generates high voltage of charger, supply, T1 and T2 which is supplied to Developer, ensuring optimum condition for image formation. HVPS receives input of 24V and generates high voltage, supplying it to Toner, OPC, Cartridge, ITB Unit and Transfer Roller.





1) Charger Voltage : Charger

- Function: voltage that charges OPC surface up to -500V~ -800V.
- Output voltage: -1.0KV ~ -2.0KV DC ±3%
- Error type: if the voltage fails to be output to Charger Roll, OPC surface will not be charged, and the toner on the developer roller will be transferred to OPC Drum, printing black paper.

2) 1st Transfer High Voltage : T1(+)

- Function: voltage necessary for transferring toner developed on OPC Drum surface onto ITB.
- Output voltage: Max +2.0KV ±3%(Duty variable, no load)
- ERROR type: if T1(+) output fails, the toner on OPC drum will not be transferred to ITB normally and the image will be blurred.

3) 2nd Transfer High Voltage : T2(+)

- Function: voltage used to transfer the toner primarily transferred on ITB again onto paper.
- Output voltage: Max +5.0KV ±3%(Duty variable, no load)
- ERROR type: if T2(+) output fails, the toner on ITB will not be transferred to paper normally and the image will be blurred.

4) T2 Cleaning Voltage : Clean : T2(-)

- Function: prevent reverse side of paper from being dirtied, by recovering the negatively charged toner remaining at Transfer Roller and sending it onto ITB.
- Output voltage: with no feedback control, output fixed voltage(-1300V ±15%)
- ERROR type: reverse side of paper will be dirtied.

5) Supplying Voltage : Supply AC+DC(-)

- Function: voltage that makes toner to develop on the area exposed by LSU by means of potential difference, output will be the voltage of AC+DC overlapped form.
- Output voltage: AC 600V ~ 2000V p-p ±1.5%
  DC -50V ~ -600V DC ±3%
- ERROR type: 1. if supply is GND, density will be extremely low.
  2. if supply is floating (for insecure terminal contact), density will be down so slightly that it is impossible to make out with naked eyes.

6) Developing Voltage : Deve AC+DC(-)

- Function: voltage that supplies toner to Developing Roller
- Output voltage: AC 250V ~ 1650Vp-p ±1.5% (supply voltage is connected to ZENER Diode 350V)
  DC -50V ~ -600V DC ±3%
- ERROR type: 1. if Deve is GND, density will be extremely down.
  2. if Deve is floating (for insecure terminal contact), density will be extremely down.

2.2.3 CRUM

■ In the case of Refill Toner Install

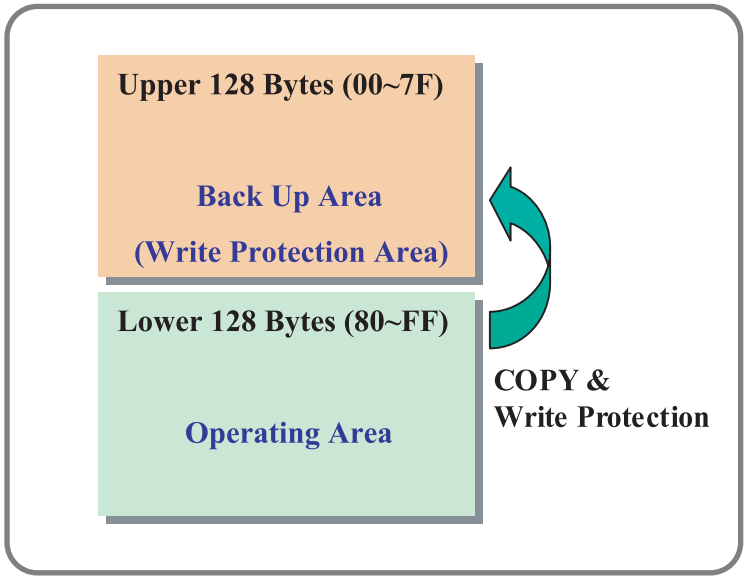
1) Perception of Refill Cartridge (when power is on or the cover is closed)
End of Life / life span data initialization -> judge to be Refill Cartridge
End of Life / life exhausted (simple refill) -> stop printing caused by life exhaustion

2) Operating

It is impossible to control appropriate development parameters, for there' s no toner specification data.
It runs with the setting of default development parameter. (Image quality will be degraded, for the lack of appropriate respond to the change of time and environment.)

3) Service Response

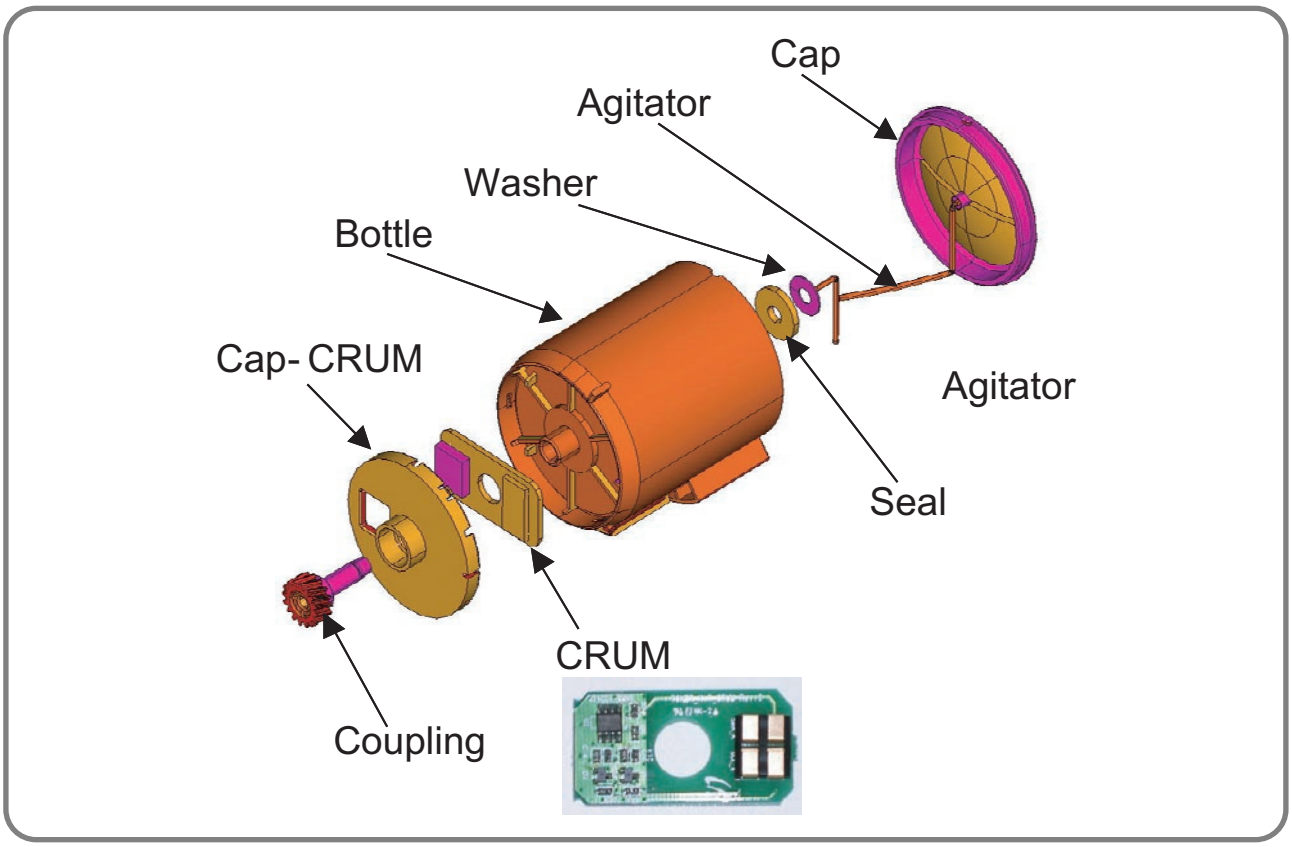
It is possible to response appropriately, for the information of cartridge life is saved at Back Up Area.



■ Process after CRU life expiration

1) Record the information of End of Life.
2) Copy the information of Operating Area into Back up Area.
3) Write-Protect Back up Area.
4) Clear some information of Operation Area.
   -> Supplier/Model Name/MFC date/Serial Number (Manufacture Information)
   -> Let cartridge refiller initialize manufacture information and life span information.

■ CRUM Position



2.2.4 General Description

This chapter is the product specification for the CLP-350N. The CLP-350N is a Color Laser Printer. CLP-350N is developed for two target users. Those are small office users who sometimes need color printouts, and medium business users who mainly use B/W printouts. The main product concept is “the world smallest and lightest color laser printer”. This model has 20ppm B/W print-speed and 5ppm color print-speed, 2400 x 600 dpi class (optical 600 x 600 dpi) color laser printer.

2.2.4.1 Controller

-The video controller board is located on the right side of the printer.

-Basic Memory is 128 Mbytes SDRAM.

-Field F/W upgradeable FLASH ROM firmware for controller, 8K byte EEPROM

-Printing Resolution :

Native 600 x 600 dpi standard

Resolution can be enhanced up to 2400 x 600 dpi class, 1200 x 600 dpi (default), 600 x 600 dpi

2.2.4.2 Processor

CHORUSm (300Mhz), Proprietary SOC

2.2.4.3 Printer Language Emulations

SPL-Color, PCL6, PS3

2.2.4.4 Memory

The controller has 128 MB SDRAM and 16 MB flash ROM on Board.

2.2.4.5 Interfaces

The system supports the following standard interfaces:

· One USB port

- USB v.2.0 compliant
- Color-coded to meet WHQL requirements, connector must be Pantone 426C

· One 10/100 BaseT network connector

- The printer supports an internal Network Interface that can be installed pre-configured on the video controller board at the factory. This supports all of the major Network Operating Systems such as the Novell NetWare, TCP/IP, etc. Details of the network specification will be provided separately.

2.2.4.6 Control Panel

No LCD, 1 keys and 5LEDs

2.2.4.7 Periodic Replacing Parts

Samsung shall specify parts requiring replacement and the frequency of replacement. The parts identified may be deemed customer replaceable parts. Periodic replacement parts shall be recommended as follows

Item(s)	Pages Printed	Part number
Black toner cartridge	Approx. 4,000 pages*	CLP-K350A
Color toner cartridge	Approx. 2,000 pages*	CLP-C350A:Cyan CLP-M350A:Magenta CLP-Y350A:Yellow
Imaging unit	Approx. 20,000 black pages or approx. 12,500 color pages	CLP-R350A
Waste toner container	Approx. 5,000 images** or Approx. 1,250 pages (fulll color Std. ISO 19752 image)	CLP-W350A
Pick-up roller	Approx. 50,000 pages	Contact a service representative
Fuser unit	Approx. 80,000 black pages or 40,000 color pages	
T2 roller	Approx. 100,000 pages	
ITB	Approx. 100,000 black pages or 25,000 color pages	

* Average A4-/letter-sized page count based on Std. ISO 19752 of individual colors on each page. Usage conditions and print patterns may cause results to vary.

** Image counts based on one color on each page. If you print documents in full color (Cyan, Magenta, Yellow, Black), the life of this item will be reduced by 25%.

2.2.4.8 Power Switch

The Switch is located at rear-side of printer and must be marked to indicate on and off.

2.2.4.9 Operator Panel

LCD: None

KEY: 1 keys (Stop)

LED: 5 LEDs (C, M, Y, K Toner, Status)

2.2.4.10 Sensor

- Paper empty (Cassette)
- Regi
- Paper Exit
- ITB Home
- Deve-Home

2.2.4.11 CRUMS

The CLP-350N engine will be equipped with electronics that can read and write data into NVRAMs otherwise known as CRUMs that reside within 1) C, M, Y, K Toner cartridges and 2) Imaging kit(Developer, OPC, ITB). The CRUM has a company ID, and Samsunga electronics logo.

The toner CRUM also identifies the type of toner cartridge (Standard or High Capacity). The CRUMs contain fixed data such as the low warning point, specified life point, and hard stop point (on toner, not on IBT unit) and also store the current life count (pages count, pixels count, images count) and % of usage (gas gauge) data.

2.2.4.12 LOW / OUT Behavior for consumables

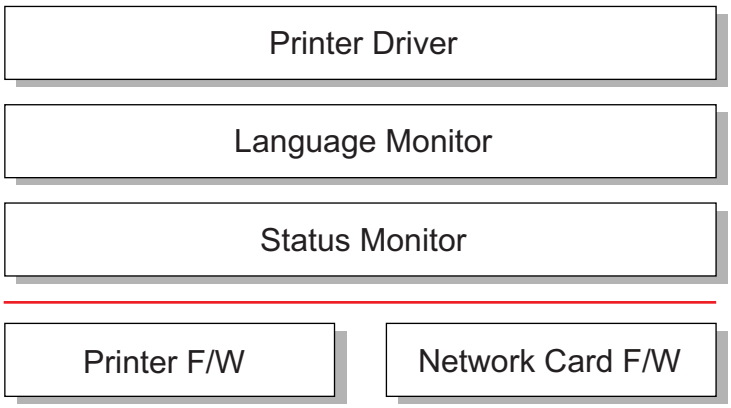
The consumable low and out behavior on CLP-350N Series engine is specified by SEC.

FP message	Device for life end detection	Low(90%)	Life(100%)	Hard stop	Reset to 0
Toner	CRUM	Yes Color(95%) Black(97.5%)	Yes Color(100%) Black(100%)	Yes Color(110%) Black(105%)	No
Imaging Kit	CRUM	Yes	Yes	No	No
Fuser	No	Yes	Yes	No	Yes
T2 Roller	No	Yes	Yes	No	Yes
Pick-up	No	No	No	No	Yes

2.3 S/W Structure and Descriptions

2.3.1 Architecture

The belt CRUM interface board is a transmission belt CRUM interface board of the photoelectric Dry Color Laser Printer, mounted on the printer body, making it possible to physically combine the body and the belt CRUM board.



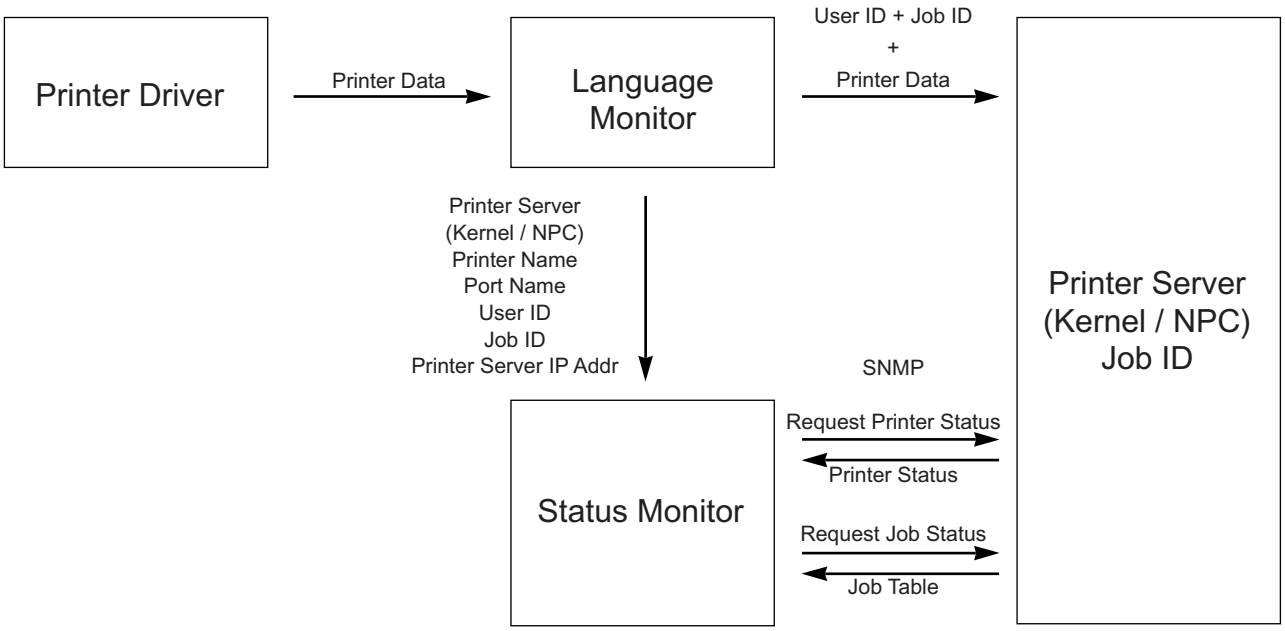
2.3.2 Language Monitor

Language Monitor is a part of the Printer Driver and the Windows Spool System. The main roll of the Language Monitor is that sends a job start message to the Status Monitor. Therefore the Status Monitor can start polling to get the printer status.
The second roll is that sends the job information such as User ID and Job ID to the Status Monitor and the Printer F/W. Hence the Status Monitor can stop polling because the Printer F/W informs the Status Monitor that printing job is complete.

2.3.3 Status Monitor

Status Monitor has no user interface. It shows only HTML help when any error occurs during printing jobs.

2.3.4 Network Interface

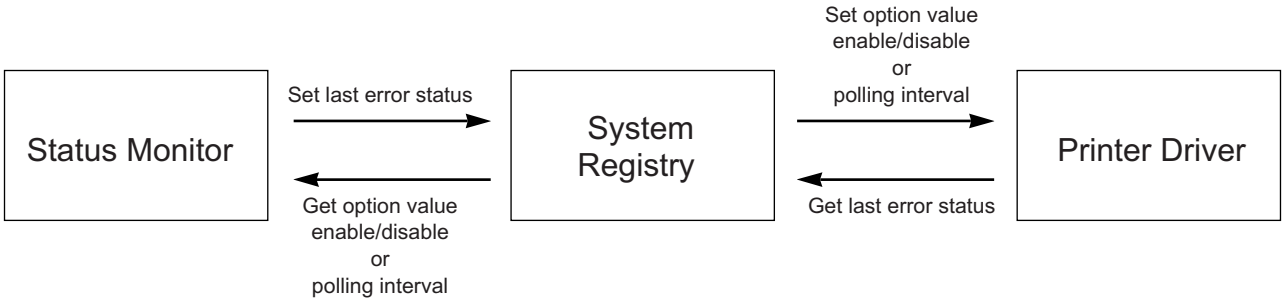


Status Monitor Data Flow

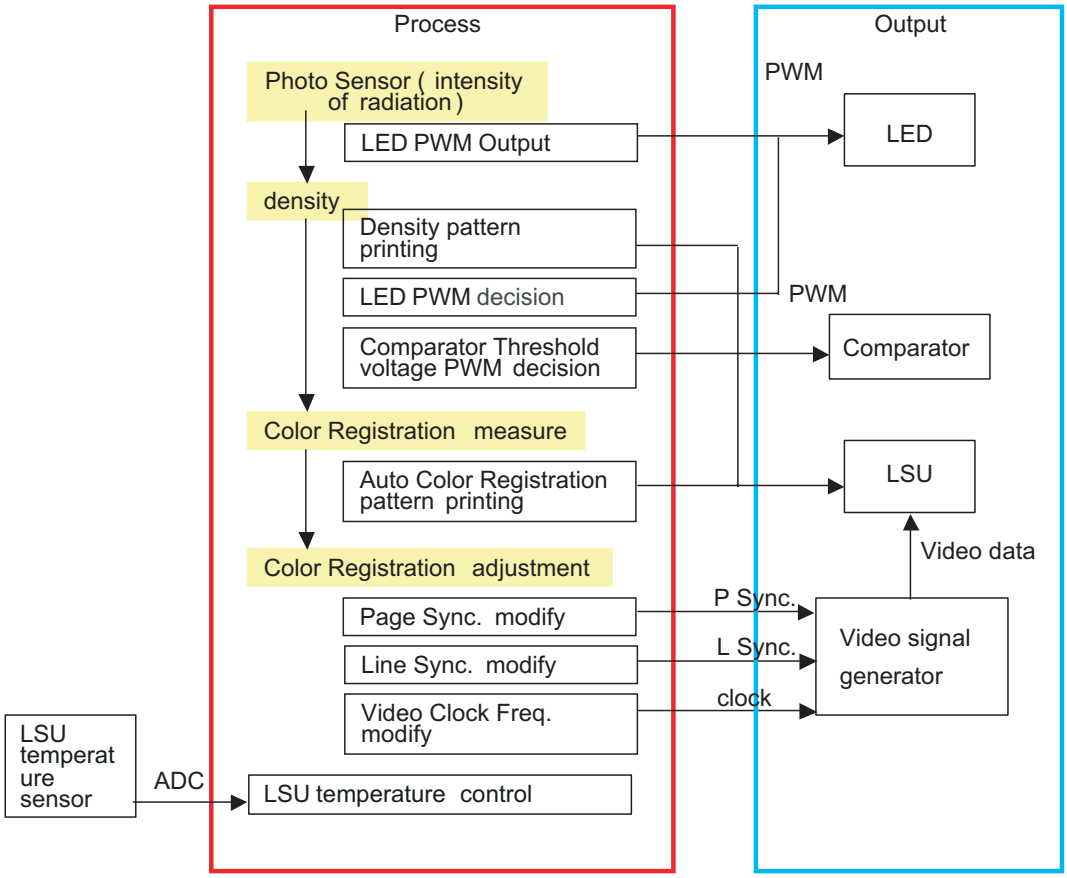
After polling is started, Status Monitor has to know when it stops the polling. For this reason, the Network Printer Server should inform of completing job when the printing job is finished.
When Status Monitor requests a job status, the Printer Server returns the job table that contains user id, job id, and job status (printing or complete or canceled).

2.3.5 Printer Driver <-> Status Monitor

The Printer Driver and the Status Monitor can set/get some data to the system registry to share the Status Monitor information such as the polling interval.
When the user wants to set the option of the Status Monitor manually, he or she can set it using the Printer Driver User Interface. So, if the user set option that the Status Monitor is disabled, the Status Monitor can's show HTML Help to the user although the error has occurred while printing.



2.3.6 System F/W Flow



2.3.7 Alarm Shortage

	90 ~ 100 %	100 ~ 110 %	110 %~
Toner (C,M,Y,K)	Ready Yellow Toner Low	Replace Yellow Toner	Yellow Toner Empty
Transfer Belt	Replace Transfer Belt Soon	Replace Transfer Belt	
Fuser	Replace Fuser Soon	Replace Fuser	
Pickup Rollers (MP/Tray1/Tray2)		Replace MP Pick-Roller	

2.3.8 Error status

1. Missing/Invalid Consumables
   - · Install Cyan (Magenta, Yellow, Black) Toner
   - · Install Transfer Belt
   - · Invalid Cyan (Magenta, Yellow, Black) Toner
   - · Invalid Transfer Belt

2. Paper JAM
   - · Jam 0 In MP(Tray1, Tray2)
   - · Jam Inside Printer
   - · Jam In Exit Area

3. Cover
   - · Cover Open : Message toggles between
     "Cover Open" and "Install Transfer Belt"
   - · SCF Cove Open

4. Service Call : Unrecoverable Error
   - · Engine LSU Error
   - · Main Motor Error
   - · Engine Fuser Over(Low) Heat Error + Open Heat Error
   - · Transfer Belt Error

5. Others
   - · Memory Overflow Error
   - · Ready IP Conflict

2.3.9 CRUM Overview

- Stands for “Customer Replaceable Unit Monitor”

- EEPROM, SAMSUNG CRUM is used for CRUM Memory.

- CRUM stores various information on consumables (including consumables’ life).

- In CLP350N, total five CRUM’s are used
  (four on toner cartridges and one on image unit)

CRUM stores the following information

· Model Name
· Supplier ID
· Serial Number
· Company ID
· MFG Date
· Capacity
· Page Count
  - Toner Cartridge and Transfer Belt
  - Indicates how many pages are printed by using the consumable

· Dot Count
  - Toner Cartridge Only
  - Indicates how many dots are printed by using the toner cartridge
· Image Count
· Model ID

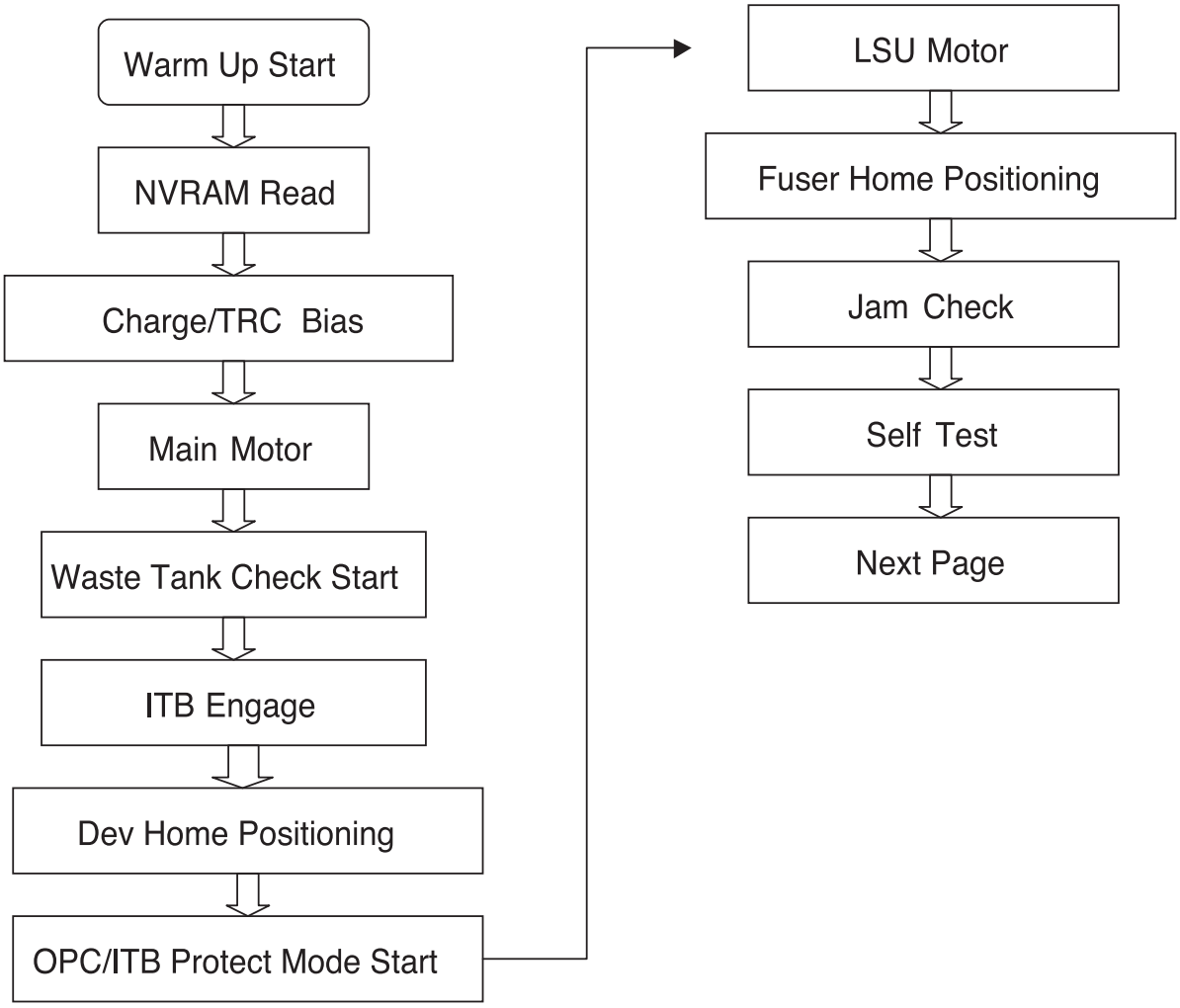
2.3.10 FW Upgrade

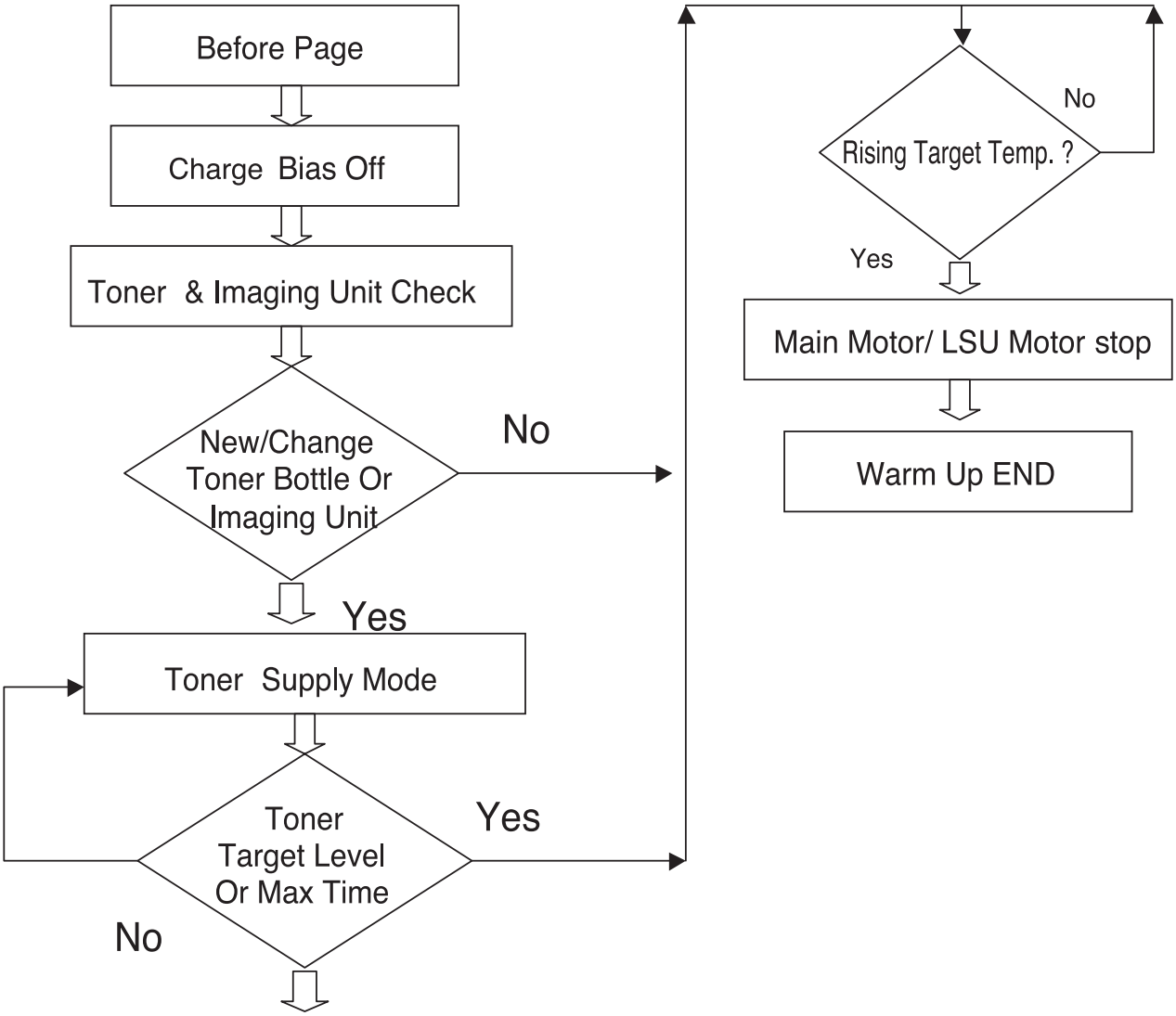
· Via USB or Network (SWS/SWAS)

· You can upgrade F/W via USB or Network whenever the printer is “Ready”

· Via Using F/W Download Mode :
  Step 1) Power on while pressing the Online Key
  Step 2) Press Online Key one more time and the status LED is on as Green.
  Step 3) Download F/W via USB

2.3.11 Initailize Flow




Before Page
Charge Bias Off
Toner & Imaging Unit Check
New/Change Toner Bottle Or Imaging Unit
No
Yes
Toner Supply Mode
Toner Target Level Or Max Time
Yes
No
Rising Target Temp. ?
No
Yes
Main Motor/ LSU Motor stop
Warm Up END

3. Disassembly and Reassembly

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3.1.1 Precautions when assembling and disassembling . . . . . page(3-2)
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3.4.8 Transfer Unit . . . . . page(3-15)

3.1 Precautions when replacing parts

3.1.1 Precautions when assembling and disassembling

* Use only approved Samsung spare parts. Ensure that part number, product name, any voltage, current or temperature rating are correct. Failure to do so could result in damage to the machine, circuit overload, fire or electric shock.

* Do not make any unauthorized changes or additions to the printer, these could cause the printer to malfunction and create electric shock or fire hazards.

* Take care when dismantling the unit to note where each screw goes. There are 19 different screws. Use of the wrong screw could lead to system failure, short circuit or electric shock.

* Do not disassemble the LSU unit. Once it is disassembled dust is admitted to the mirror chamber and will seriously degrade print quality. There are no serviceable parts inside.

* Regularly check the condition of the power cord, plug and socket. Bad contacts could lead to overheating and firfe. Damaged cables could lead to electric shock or unit malfunction.

3.1.2 Preautions when handling PBA

Static electricity can damage a PBA, always used approved anti-static precautions when handling or storing a PBA.

>> Precautions when moving and storing PBA

1. Please keep PBA in a conductive case, anti-static bag, or wrapped in aluminum foil.
2. Do not store a PBA where it is exposed to direct sunlight.

>> Precautions when replacing PBA

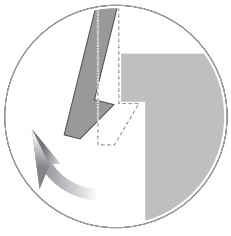
1. Disconnect power connectors first, before disconnecting other cables
2. Do not touch any soldered connections, connector terminals or other electronic parts when handling insulated parts.

>> Precautions when checking PBA

1. Before touching a PBA, please touch other grounded areas of the chassis to discharge any static electrical charge on the body.
2. Take care not to touch the PBA with your bare hands or metal objects as you could create a short circuit or get an electric shock. Take extra care when handling PBAs with moving parts fitted such as sensors, motors or lamps as they may get hot.
3. Take care when fitting, or removing, screws. Look out for hidden screws. Always ensure that the correct screw is used and always ensure that when toothed washers are removed they are refitted in their original positions.

3.1.3 Releasing Plastic Latches

Many of the parts are held in place with plastic latches. The latches break easily; release them carefully.
To remove such parts, press the hook end of the latch away from the part to which it is latched.



3.2 Parts for Maintenance and Repair

3.2.1 Replacement interval for parts with a limited life

Some of the parts in this printer have a limited life, shorter than that of the whole machine. These parts must be replaced periodically.
The table below shows the interval at which these parts should be replaced.
The table shows the life of each part, and is measured when using A4 paper. When servicing a machine always check the status of these parts using the control panel and ensure that parts are replaced at the appropriate times otherwise a general degradation in print quality will occur.

Item(s)	Pages Printed	Part number	Remark
Black toner cartridge	Approx. Initial : 1,500 pages* Sales : 2,000 pages*	CLP-K300A	User Replacement
Color toner cartridge	Approx. Initial : 700 pages* Sales : 1,000 pages*	CLP-C300A:Cyan CLP-M300A:Magenta CLP-Y300A:Yellow	
Imaging unit	Approx. 20,000 black pages or approx. 12,500 color pages	CLP-R300A	
Waste toner container	Approx. 5,000 images** or Approx. 1,250 pages (fulll color 5% image)	CLP-W300A	
Pick-up roller	Approx. 50,000 pages	Contact a service representative	Engineer Replacement
Fuser unit	Approx. 100,000 black pages or 50,000 color pages		
T2 roller	Approx. 100,000 pages		
ITB	Approx. 60,000 black pages or 15,000 color pages		

* Average A4-/letter-sized page count based on Std. 19752 of individual colors on each page. Usage conditions and print patterns may cause results to vary.

** Image counts based on one color on each page. If you print documents in full color (Cyan, Magenta, Yellow, Black), the life of this item will be reduced by 25%.

3.2.2 Printer Cleaning

A printer should be regularly cleaned, especially if it is used in a dusty environment. This will ensure that print quality remains high and failure due to contamination of printing services is less likely to occur.

* Clean the printer with a soft, lint free, cloth dipped in a "Recommended cleaner" "Recommended cleaner" can be purchased from our service center. (where available)

* Do not touch the transfer roller when cleaning the inside of the printer. Grease and oils from the skin will contaminate the surface and reduce print quality.

* Do not touch transfer roller when cleaning inside of machine. If transfer roller gets dirty, printing quality could be low.

* Please refer to the User Manual for cleaning instructions.

3.3 Information Related to Disassembly and Assembly.

3.3.1 Special service parts

Never disassemble or adjust the items mentioned, a stock of these items should be maintained.

1) Disassembly of the LSU unit

There are no serviceable parts inside the LSU. Alignment of the mirrors is critical. Opening the LSU will allow dust into the laser and significantly reduce print quality. It is very dangerous to operate or service a machine with the LSU open or system interlocks disabled. Exposure to laser radiation can cause blindness.

2) Disassembly of the ITB unit

Do not disassemble the ITB. The alignment of the home sensor is critical and is set up in the factory on a special jig. Incorrect re-assembly will cause print quality degradation.

3) Care of the Toner cartridge

Toner cartridges contain an extremely fine powder. Please keep toner cartridges away from children. The toner powder contained in the toner cartridge may be harmful and if swallowed you should contact a doctor. Take care not to spill toner - spillages should be cleaned with a vacume cleaner and washed in could water (hot water sets the toner). Do not touch the developer roller surface as contamination will reduce print quality. Take care not to damage the roller's surface when installing or removing a toner cartridge.

4) Disassembly of DEVE drive ass'y and the main drive ass'y

The alignment of the drive mechanism is critical and it has been set up in factory using a jig and a driving gear. It is adjusted for the best gearing alignment. If the motor is disassembled alignment would not be maintained and this could cause operational noise and image problems: image alignment and toner distribution may be affected.

5) Disassembly of terminal parts

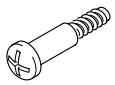
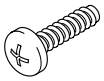
Do not adjust the variable resistors on the PBA. They have been already adjusted in the factory.

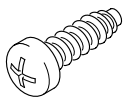
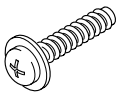
6) Disassembly of the fuser unit

- The fuser melts toner onto the paper at a high temperature: therefore, you need to take special care not to get burned by a hot fuser. When removing the fuser from a set that has recently been operating you need to take extra care.
- Do not touch an AC line (Copper contact) on a main frame even after removing the fuser.

3.3.2 Screws used in the printer

The screws listed in the table below are used in this printer. Please ensure that, when you disassemble the printer, you keep a note of which screw is used for which part and that, when reassembling the printer, the correct screws are used in the appropriate places.

NO	SEC CODE	DESCRIPTION & SPECIFICATION	LOCATION	QT'Y
S1 	6009-001396	SCREW-SPECIAL;PH,+,-,M3,L10.3, ZPC(BLK),SWRCH18A,B TITE,-	PTB Draw Connector	2
S2	6003-000269	SCREW-TAPTITE;BH,+,-, S,M3,L6,ZPC(YEL),SWRCH18A,-	BRACKET-CONT LOWER + Assy Network Card	2
			BRACKET-CONT LOWER + BRACKET-CONT UPPER	4
			BRACKET-CONT LOWER + MAIN PBA	4
			BRACKET-CONT UPPER + BRACKET-POWER	2
			SUB MAIN FRAME + BRACKET-CONT LOWER	2
			SUB MAIN FRAME + UNIT SMPS	2
			BRACKET-CONT UPPER + IPR-SHIELD SIMM	1
			BRKT-SHIELD SMPS + SMPS type5 + Fuser BD	8
			FRAME-FRONT + FRAME-REAR + FRAME-BOTTOM	4
			SUB MAIN FRAME + PBA DRIVE	3
			MEA-FRAME BASE + CHANNEL FRAME BASE	3
S3 	6003-000275	SCREW-TAPTITE;BH,+,B,M3,L10,BLK, SWCH1018AK	MAIN FRAME + COVER-REAR	4
			DRAW CONNECTOR	2
S4	6003-001086	SCREW-TAPTITE;BH,+,B,M3,L12, ZPC(BLK),SWRCH18A	SUB MAIN FRAME + BRACKET-MPF	1
			SUB MAIN FRAME + SUB PICK-UP	1
			UNIT MPF + BRACKET-MPF	1
			MEA-ASSY-MPF + GUIDE-PAPER-MP	2
			MEA-UNIT FRAME BASE + MEA-ASSY-MPF	3
S5	6003-000261	SCREW-TAPTITE;BH,+,B,M3,L6, ZPC(YEL),SWRCH18A	HOUSING-OPC	8
S6	6003-000282	SCREW-TAPTITE;BH,+,B,M3,L8, ZPC(BLK),SWCH10	F/M_Upper-Fuser + C/M_Carbon-Brush	2
			FRAME ASSY	28
			FRAME-PTB ASS'Y	28
			COVER-M-OP FRAME LED + Cover DECO	4
			COVER-M-OP FRAME LED + LED PBA	7

NO	SEC CODE	DESCRIPTION & SPECIFICATION	LOCATION	QT'Y
			COVER EXIT + Cover Actuator Sensor	1
			Cover Exit + COVER- AIR-DUCT	1
			FRAME MAIN + GUIDE RAIL REAR	6
			FRAME-MAIN + ELA UNIT-BRKT-DRAW	1
			FRAME-MAIN + ELECTRODE-HV D	1
			FRAME-MAIN + HOUSING-SENSOR EXIT	1
			FRAME-MAIN + MEA UNIT-DUCT-REAR	2
			FRAME-MAIN + PLATE-GROUND FUSER	1
			FRAME-MAIN + PLATE-GROUND OPC	2
			COVER FUSER AC + HOLDER-_M_MIDDLE PART	4
			GUIDE-TERMINAL CH + GUIDE-PTB TERMINAL	1
S7 	6003-001256	SCREW-TAPTITE;BH,+,B,M4,L10,NI PLT,SWRCH18A	SUB MAIN FRAME + COVER LEFT	2
			SUB MAIN FRAME + COVER TOP	2
			SUB MAIN FRAME + UNIT LSU	3
			FRAME FRONT/REAR + SUB FRAME BASE	4
			SUB FRAME + SUB FRAME BASE	4
			MEA-FRAME BASE + ELA-Guide-SCT-paper	2
			MEA-UNIT FRAME BASE + BRACKET-POWER	1
			MEA-UNIT FRAME BASE + MEA-ASSY-PICKUP	5
S8	6003-000301	SCREW-TAPTITE;BH,+,S,M4,L6, ZPC(YEL),SWRCH18A	BRKT main front + BRKT main rear	6
			BRKT main rear + Motor	10
			BRACKET-P-POWER + Power Inlet GND wire	1
S9	6002-000308	SCREW-TAPTITE;PH,+,B,M2.6,L6, ZPC(YEL),SWRCH18A,-	COVER-OP-FRAME-LCD + LCD PBA	2
S10 	6003-000196	SCREW-TAPTITE;PWH,+,B,M3, L10,NI PLT,SWRCH18A	SUB MAIN FRAME + COVER DECO	4
			SUB MAIN FRAME + COVER-LEFT-HANDLE	2
			SUB MAIN FRAME + COVER-TOP	3
			SUB MAIN FRAME + DRIVE unit	6
			SUB MAIN FRAME + HOUSING MIDDLE PART	2
			SUB MAIN FRAME + HVPS PBA	6
			SUB MAIN FRAME + LINK FRONT(COVER RIGHT)	1
			UNIT DUCT LEFT+ HOUSING MIDDLE PART	1
			COVER_FRAME-FUSER + BRACKET_GUIDE-FRAME	2
			COVER_M_EXIT-ROLLER + COVER_M_SIDE-L/R	2

NO	SEC CODE	DESCRIPTION & SPECIFICATION	LOCATION	QT'Y
			FRAME_LOWER-FUSER + FRAME_UPPER-FUSER	2
			FRAME_M_LOWER FUSER + HOLDER_M_SPRING PR	2
			FRAME_M_LOWER-FUSER + COVER_M_SIDE-L	1
			FRAME_M_LOWER-FUSER + COVER_M_SIDE-R	1
			FRAME_M_LOWER-FUSER + GUIDE_M_INPUT	2
			FRAME_M_UPPER-FUSER + SHEET-DUMMY	1
			FRAME_M_UPPER-FUSER + THERMISTOR-NTC	1
			FRAME_M_UPPER-FUSER + THERMOSTAT	2
			FRAME_UPPER-FUSER + Bracket_Idle-Gear	1
			FRAME_UPPER-FUSER + ELECTRODE_TERMINAL L	1
			FRAME_UPPER-FUSER + ELECTRODE_TERMINAL R	1
			FRAME_UPPER-FUSER + GROUND_P_FUSER-BALL	1
			FRAME_UPPER-FUSER + PBA-FUSIBILITY	1
			GUIDE_M_OUTPUT + GUIDE_M_DUPLEX	2
			Cover right + Holder Link	2
			Cover right + Holder Lower F	3
			Cover right + Holder Lower R	2
			Cover right + Holder Upper F	1
			Cover right + Holder Upper R	1
			FRAME-CASSETTE + GEAR-PINION	1
			FRAME-CASSETTE + GUIDE-FRONT CASSETTE	2
			SUB MAIN FRAME + FRAME-FRONT/FRAME-REAR	4
			FRAME MAIN + ELA UNIT-Deve-Terminal	4
			FRAME MAIN + ELA UNIT-PTB-Terminal	3
			FRAME MAIN + GUIDE RAIL FRONT	2
			FRAME MAIN + SUB-HOLDER-AC	2
			SUB MAIN FRAME + COVER EXIT GUIDE	2
			Sub Main Frame + Link Rear 1	1
			MEA FRAME BASE + MPF unit(right)	1
			MEA-UNIT FRAME BASE + CAM-CATCH	1
			MEA-UNIT FRAME BASE + IPR-BRKT BASE BAR	3
			BRKT-GEAR-TRAY + BRKT-HOLDER-PICKUP	1
			FRAME-BASE-MP + BRACKET-GEAR-TRAY	1
			FRAME-BASE-MP + PLATE-GROUND BRACKET	1

NO	SEC CODE	DESCRIPTION & SPECIFICATION	LOCATION	QT'Y
			MPF UNIT ASS'Y + SOLENOID	1
			FRAME-P-REGI + COVER-M-REGI-FRAME	2
			FRAME-P-REGI + FRAME-PICK-UP	4
			FRAME-PICK-UP + GUIDE-GEAR-BRACKET	3
			SOLENOID-MAIN + GUIDE-GEAR-BRACKET	1
			HOLDER SENSOR + FRAME-P-REGI	1
S11	6003-000264	SCREW-TAPTITE;PWH,+,B,M3, L6,ZPC(YEL),SWRCH18	COVER-INNER-MP + GEAR-PINION	1

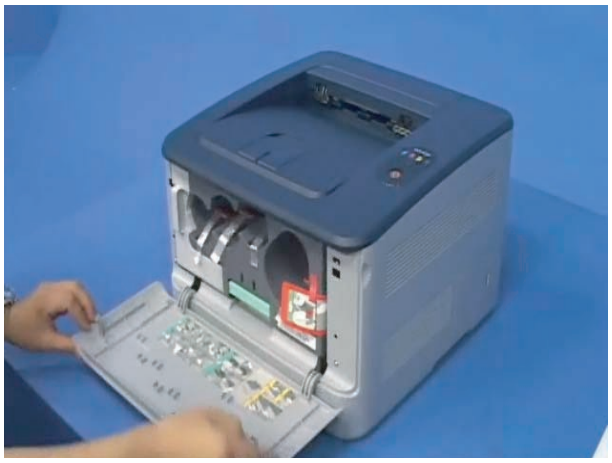
3.4 Disassembly Procedure

The description of disassembly and reassembly in this manual is listed according to the disassembly procedures. If you find the certain unit or Ass°Øy, please consult the name of unit under the picture.

3.4.1 Cover Unit

1.Take out the Cassette.

2. Open the Front-Cover.

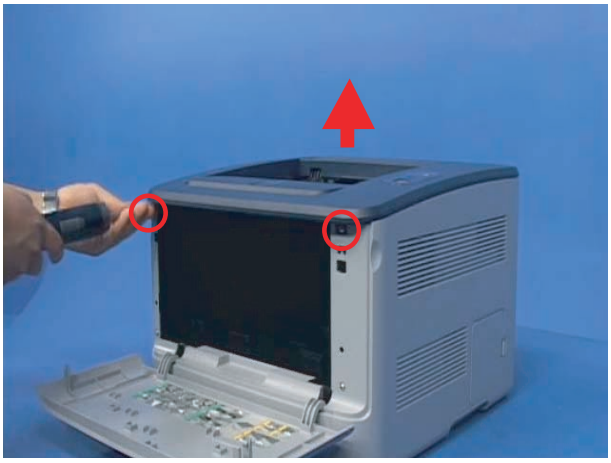


3. Remove the Imagine Unit.

4. Remove the ITB Unit.

※ When reassembling, reassemble ITB Unit to the direction of arrow (from down to up)

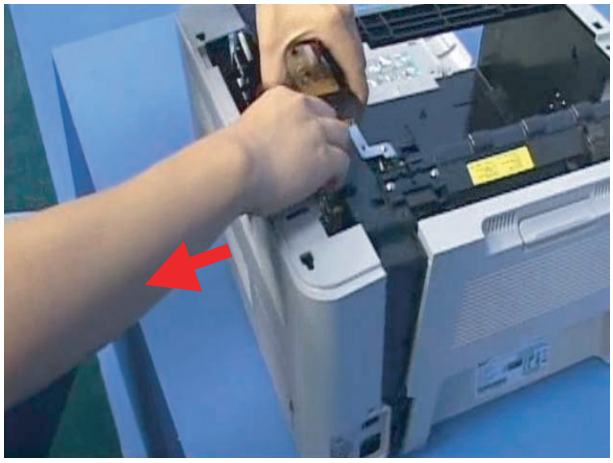
5. Remove the two screws and then Top Cover.



6. Remove the one screw from the Right-Cover.

7. Remove the one screw from the rear of the Right-Cover.

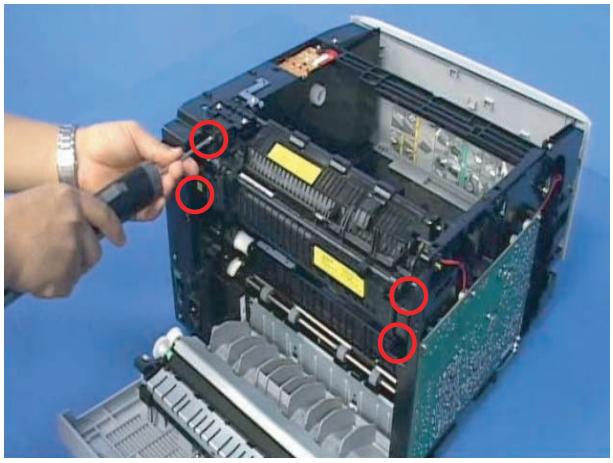
8. Release the Right-Cover from the SET.



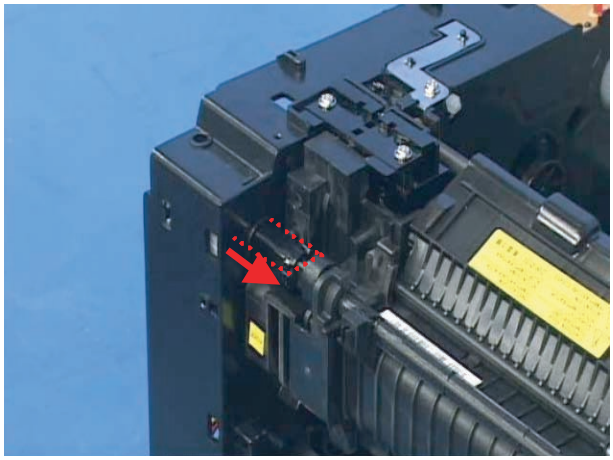
9. In the same way, release the Left-Cover from the SET.

3.4.2 Fuser Unit

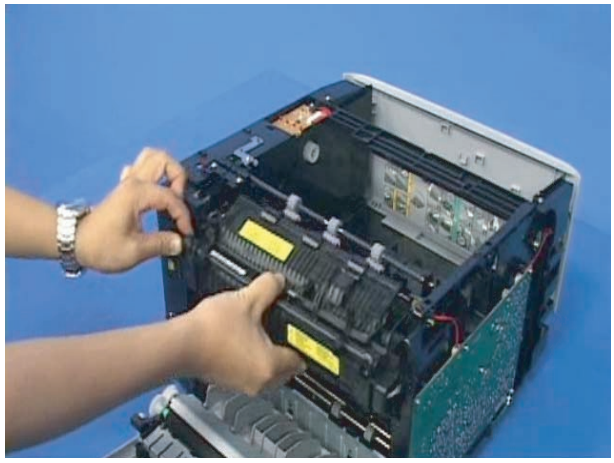
1. Remove the 4 screws on the Fuser.



2. Push the Holder shaft Fuser as shown below .

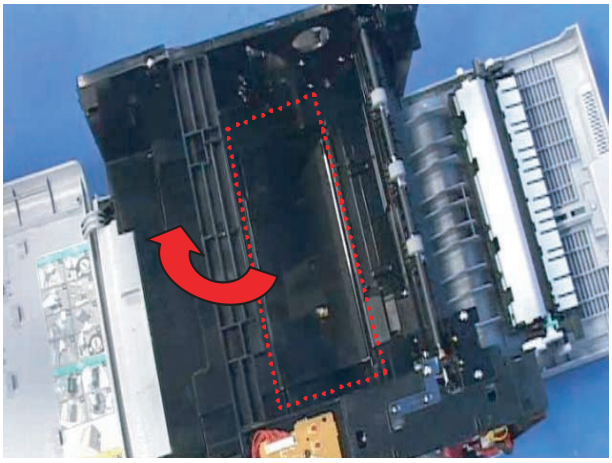


3. Take out the Fuser Ass'y.

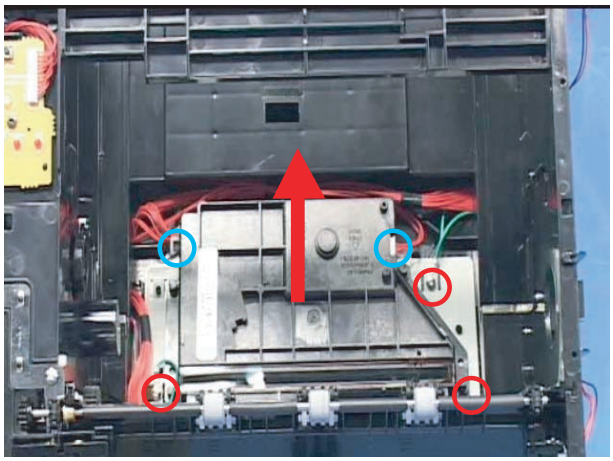


3.4.3 LSU Unit

1. Release the LSU Cover.

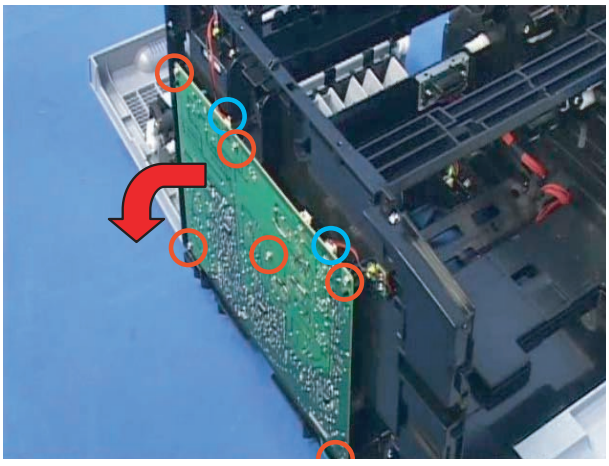


2. Unplug the Harness (2 EA), remove the 3 screws and release the LSU from the SET.

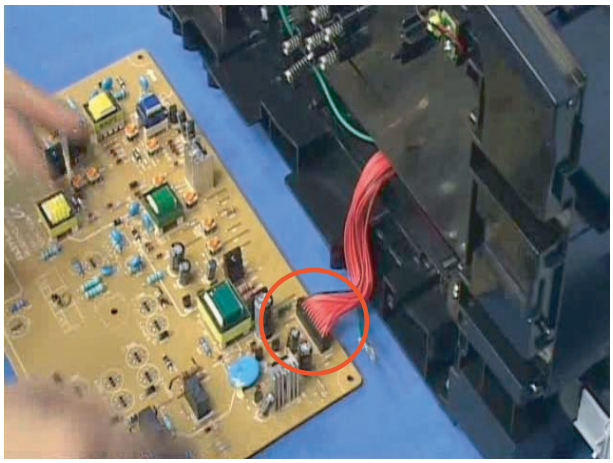


3.4.4 HVPS Board

1. Unplug the Harness (2 EA), remove the 6 screws, and take out the HVPS.

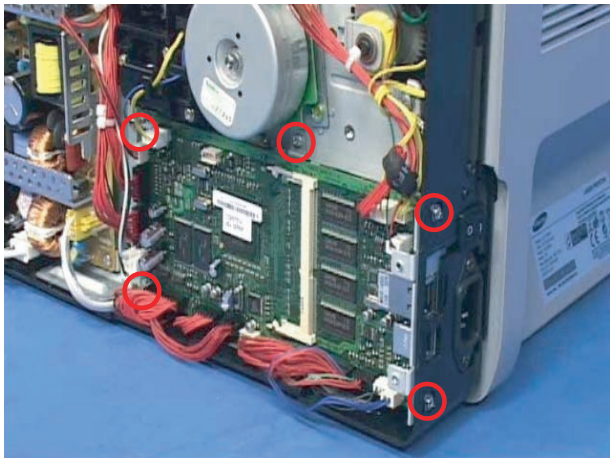


2. Unplug the Harness from the HVPS.



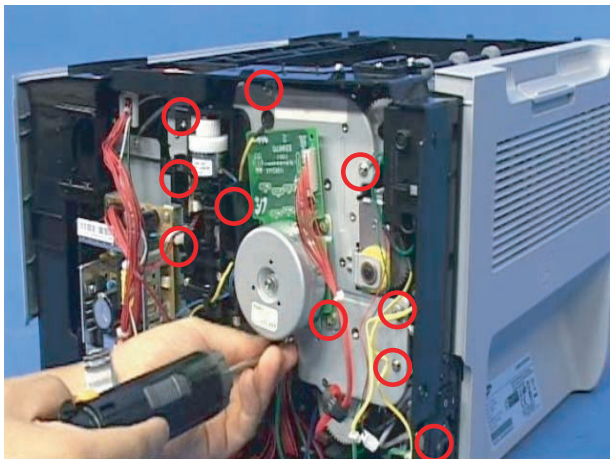
3.4.5 Main Board

1. Unplug all the Harness from the Main board, remove the 5 screws and release the Main board from the SET.



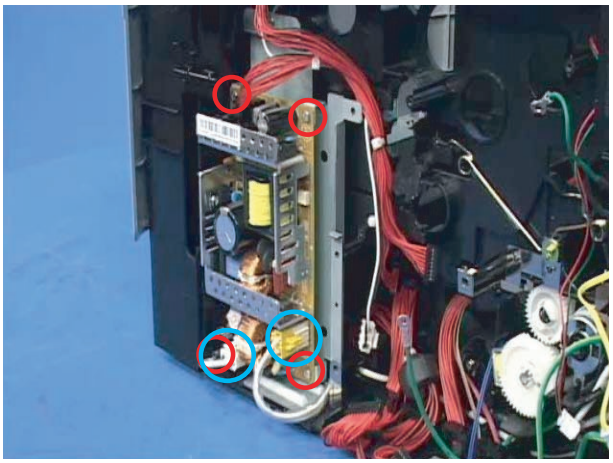
3.4.6 Drive Unit

1. Remove the 10 screws and release the Drive Ass'y from the SET.



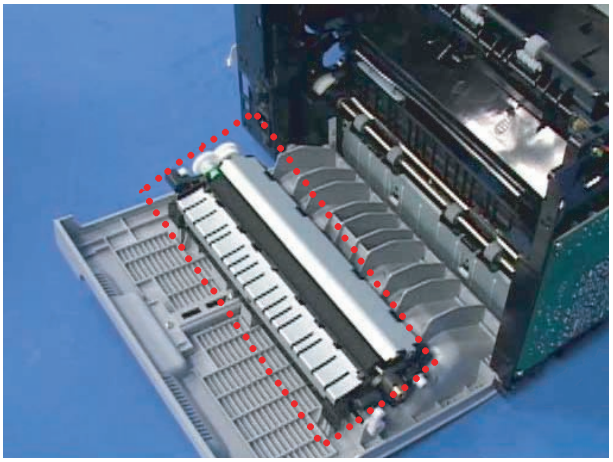
3.4.7 SMPS Board

1. Unplug the Harness (2 EA), remove the 4 screws and release the SMPS board from the SET.



3.4.8 Transfer Unit

1. Take out the Transfer Unit.



4. Adjustment and Troubleshooting

4.1 Alignment and Adjustments

This chapter describes the main functions for service, such as the product maintenance method, the test output related to maintenance and repair, Jam removing method, and so on.
It includes the contents of manual.

4.1.1. Control Panel

4.1.1.1 Overview

- The CLP-350N printers do not have LCD panel which is used in other color model printers. On the contrary to other models of color printers, they show the status of the printer only with their LEDs.
- The CLP-350N printers have 1 keys and 5 LEDs. The 'User Interface' module handles the processing of the 'Key Press' and 'LED control' at different states of the machine.

4.1.1.2 Architecture

KEY (1 key): Stop key

LED (5 LEDs):
4 LED for CMYK toners : toner-low(cyan, magenta, yellow, black) LEDs
1 LED for status : ready (green) or error(red) status LED (two color LED)

4.1.1.3 Data and Control Flow

User interface (panel) is made up of
- KEY input detection & process
- LED control

The initial process to use the panel checks register's values of key and LED.
If user input key value, the operation to be defined by key value is processed and the LED operation to be defined by printer status is controlled.

4.1.2 Function

4.1.2.1 KEY Function

There are one keys present. The one is Stop key.
If users input key value, the key input is transferred via GIP (General Input Port) and the operation to be defined by key value is processed.

4.1.2.1.1 Functions

Stop key function is made up of
- Demo page/Configuration sheet printing function
- Job cancels function
- Start manual feeding function
- Firmware downloads mode function

4.1.2.1.2 Detail Description

KEY input detection & process order

1) User KEY input

2) KEY input detection
: If the key input is detected when the key input check per timer tick 10ms, The 10ms interrupt service routine sends the key detection event to panel task.

3) KEY input process

Stop key input process
: After the panel task is received the Stop key detection event, it checks the engine error status two times and process the operation to be defined by key value.

- Demo page/Configuration sheet function
This button will have multiple functions when the printer is in idle state.
Demo page printing
Press and hold this button for about 2 seconds until the control panel lights blink slowly to print a demo page.
Configuration sheet printing
Press and hold this button for about 5 seconds until the control panel lights blink rapidly to print a configuration sheet.

- Job cancels function
When the printer is printing an active printing job, press and holds this button until the control panel lights blink to cancel a job the printer is currently except the manual job.

- Start manual feeding function
When you select manual feed for paper source, press this button each time you feed a sheet of paper manually.
The application of manual feeding function in CLP-300 will be determined

- **Firmware downloads mode function**
  Turn on the printer at the same time that the button is pressed.
  If all LEDs scroll, release the button and download the firmware ROM file via USB port

4.1.2.2 LED Function

There are five LEDs present. Status led indicate the error/online status of the printer in idle mode. In error mode, the status LED glows by red color and in ready mode, it glows by green color. The other four LEDs indicate the toner status. If the black toner needs to change, the toner-low (black) LED glows and if the color (yellow, magenta, cyan) toners need to change, the toner-low (yellow, magenta, cyan) LED glows.

4.1.2.2.1 Functions

LED function is made up of
- Ready/Printing status display
- Error status display
- Toner low status display

4.1.2.2.2 Detail Description

LED control order
1) Control LED according to current printer state
  : After the panel task is received each event, the LED operation is controlled by current printer status.

2) Write LED value to GOP (General Output Port)

LED behavior

Status LED (Green/Red)	Toner-low (CMYK)LEDs	Status
Green LED ON	N/A	Ready to receive the data.
Green LEDS LOWLY BLINK	N/A	Receiving the data from the host.
Green LED FAST BLINK	N/A	Printing the page.
Red LED BLINK	N/A	Paper source is set to "MANUAL". Need to push the button to start the printing
Red LED ON	N/A	Out of paper
Red LED ON	N/A	Cover open
Red LED ON	N/A	Paper jam
Green/Red BLINK	CMYK BLINK	Service error (LSU or Fuser error)
N/A	Toner-low(black) ON	Black toner needs to change
N/A	Toner-low(cyan) ON	Cyan toner needs to change
N/A	Toner-low(magenta) ON	Magenta toner needs to change
N/A	Toner-low(yellow) ON	Yellow toner needs to change

Service Error LED Operation
All LEDs blink the each time interval.

Service Error		LED operation
Fuser Error	Open Fuser Error	All LEDs (Toner low LEDs, Status (Red) LED) blink a time interval of 1 second.
	No Heat Error	All LEDs (Toner low LEDs, Status (Red) LED) blink a time interval of 4 seconds.
	Over Heat Error	All LEDs (Toner low LEDs, Status (Green/Red) LED) blink a time interval of 1 second.
Scanner Error	P Motor Error	All LEDs (Toner low LEDs, Status (Green) LED) blink a time interval of 1 second.
	H Sync Error	All LEDs (Toner low LEDs, Status(Green) LED) blink a time interval of 4 seconds.

Assert Error LED Operation The panel LED operation display the line number of assert error occurrence.	
Line number	**LED operation**
start & end	All LEDs(Toner low LEDs, Status(Red) LED) turn ON for approximately 2 seconds and then All LEDs turn OFF for approximately 3 seconds.
1	After Status (Red) LED blinks one time, Toner low LEDs blink one time.
2	After Status (Red) LED blinks two times, Toner low LEDs blink one time.
3	After Status (Red) LED blinks three times, Toner low LEDs blink one time.
4	After Status (Red) LED blinks four times, Toner low LEDs blink one time.
5	After Status (Red) LED blinks five times, Toner low LEDs blink one time.
6	After Status (Red) LED blinks six times, Toner low LEDs blink one time.
7	After Status (Red) LED blinks seven times, Toner low LEDs blink one time.
8	After Status (Red) LED blinks eight times, Toner low LEDs blink one time.
9	After Status (Red) LED blinks nine times, Toner low LEDs blink one time.

4.1.3 Jam Removal

When a jam occurs while printing a jam message is displayed on the control panel.

* **Jam0 In Tray 1:**
  Paper jam in the main cassette.
* **Jam0 In SCF:**
  Paper jam in the SCF cassette.
* **Jam Inside Printer:**
  Jam 1, Paper is jammed inside the printer.
* **Jam In Exit Area:**
  Jam2, Paper is jammed in the exit area when ejecting paper.

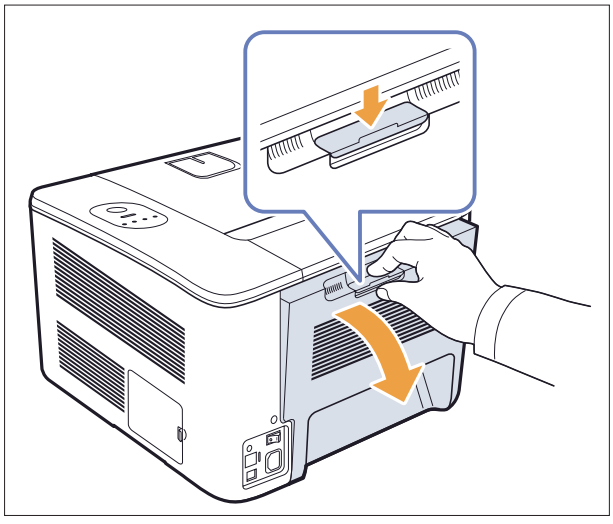
CAUTION: When removing jammed paper, always pull it firmly and evenly without any sudden jerks. If at all possible, remove the paper as a single sheet. If the paper tears ensures ALL paper fragments are removed. Any fragments left inside the machine will cause it to jam again.

4.1.3.1 Clearing Paper Jams

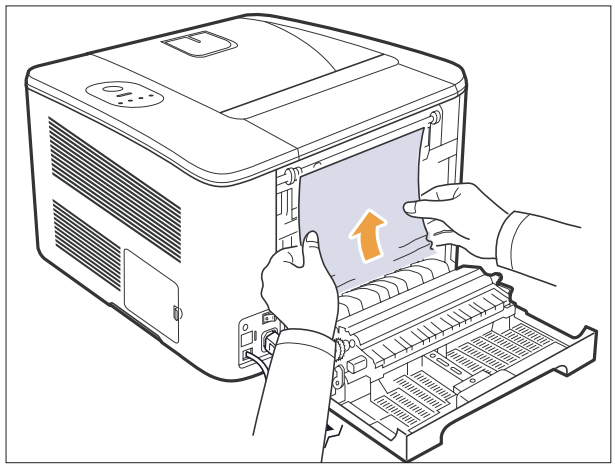
NOTE: When removing paper that is jammed in the printer, if possible always pull the paper in the direction that it normally moves so as not to damage internal components. Always pull firmly and evenly; do not jerk the paper. If the paper tears, ensure that all fragments of paper are removed; otherwise a jam will occur again.

If a paper jam occurs, the Status LED on the control panel lights red. Find and remove the jammed paper. To resume printing after clearing paper jams, you must open and close the front cover or rear cover.

1. To remove the jammed paper, open the rear cover.

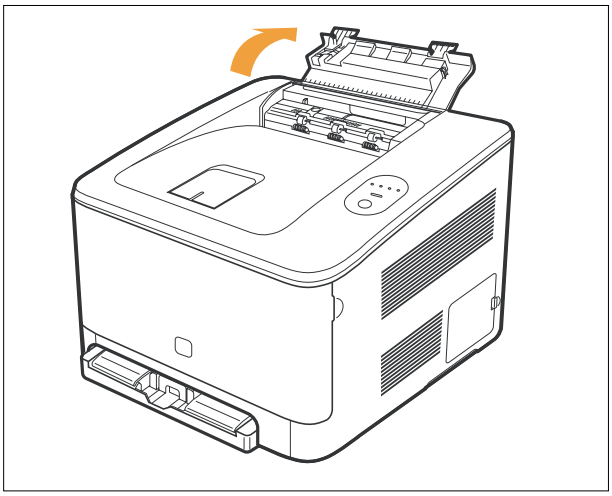


2. Carefully remove the paper by pulling in the direction as shown below. Most of the jammed paper can be removed in this step.

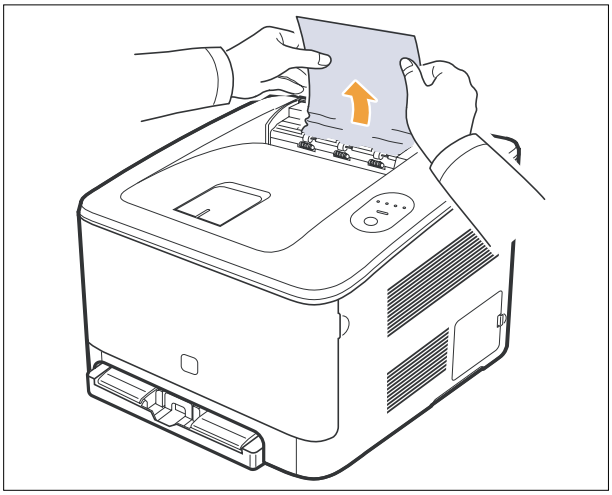


If you cannot find the jammed paper, or if there is any resistance removing the paper, stop pulling and go to the next step.

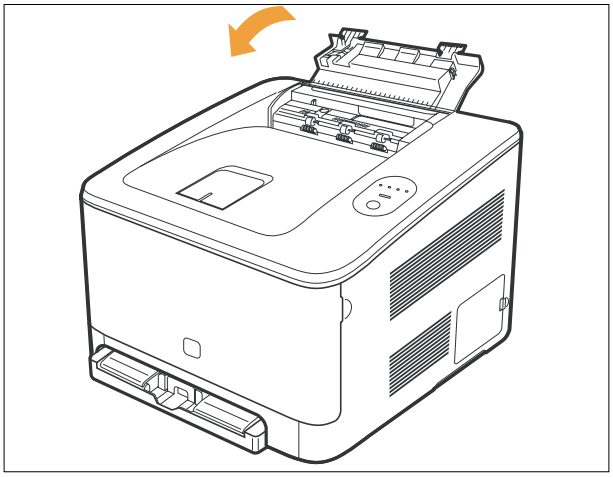
3. Close the rear cover and then open the top cover.



4. Holding the inner cover open, carefully take the jammed paper out of the printer. The inner cover will then close automatically.



5. Close the top cover. Make sure that it is securely latched.



6. Open and then close the rear cover or front cover to resume printing.

4.1.3.2 Tips for Avoiding Paper Jams

By selecting the correct paper types, most paper jams can be avoided.

- Follow the procedures Jam remove. Ensure that the adjustable guides are positioned correctly.
- Do not overload the paper tray.
- Do not remove the paper from the tray while printing.
- Flex, fan, and straighten the paper before loading.
- Do not use creased, damp, or highly curled paper.
- Do not mix paper types in a tray.
- Use only recommended print materials.
- Ensure that the recommended print side of print materials is facing up in the paper tray.

4.1.4 Sample Pattern

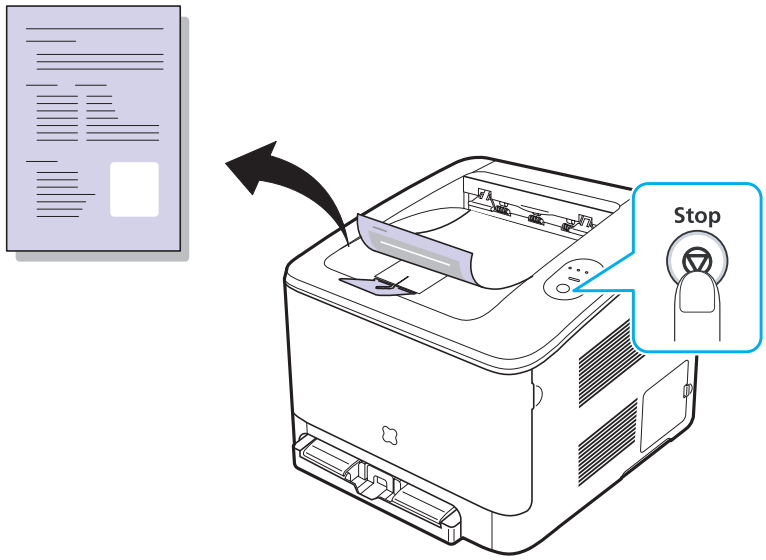
This product provides several printable test patterns for maintenance purposes. These patterns can be used to aid the diagnosis of print quality problems.

4.1.4.1 Printing a Demo Page

Print a demo page to make sure that the printer is operating correctly.
To print a demo page: In ready mode, press and hold the Stop button for 2 seconds.
A demo page showing the printer's features and capabilities is printed.

4.1.4.2 Printing a Configuration Page

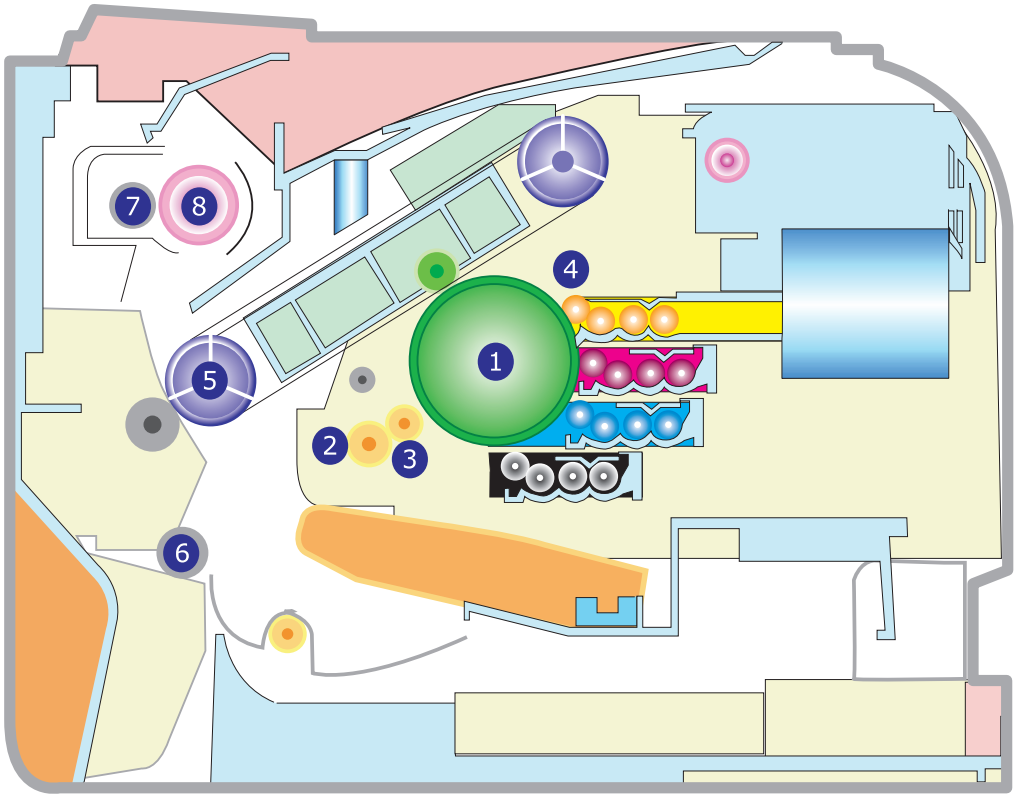
You can print a configuration page from the printer's control panel. Use the configuration page to view the current settings, to help troubleshoot problems.
To print a configuration page: In ready mode, press and hold the Stop button on the control panel for 5 seconds.
A configuration page prints out.



4.1.5 Periodic Defective Image

If an image defects appears at regular intervals on the printed-paper, it is due to a faulty or damaged roller. Refer to the table below and check the condition of the appropriate roller.

No	Roller	Period	Phenomenon
1	OPC Drum	188.5 mm	White and Black Spots
2	Charge Roller	37.7mm	Black Spot and line and Periodic Band
3	Supply Roller	47.5mm	Periodic Band by little difference of density
4	Developing Roller	26.0mm	White Spot, Horizontal black band
5	1st Transfer Roller	32.7mm	Ghost, Damaged Image by abnormal tranfer
6	2nd Transfer Roller	57.5mm	Ghost, Damaged Image by abnormal tranfer
7	Pressure Roller	50.3mm	Background
8	Heat Roller	86.4mm	Black Spots or Vertical Black Band



4.1.6 How to use EDC (Engine Diagnostic Control) Mode

EDC Mode is feature that allows the engineer to check the condition of the print engine. It can check the operating condition of the motors, sensors, solenoids and clutches, measure the High Voltage from the HVPS and check the operation of the fuser and LSU.

4.1.6.1 Enterence

When trying to check the CLP-350N EDC Mode, additional EDC execution program needed.

[Procedure of EDC Mode operation]

a) First, turn on the Power of Printer, wait until Ready state

b) In this state, Run the EDC program on the computer

c) After that, click the menu of screen

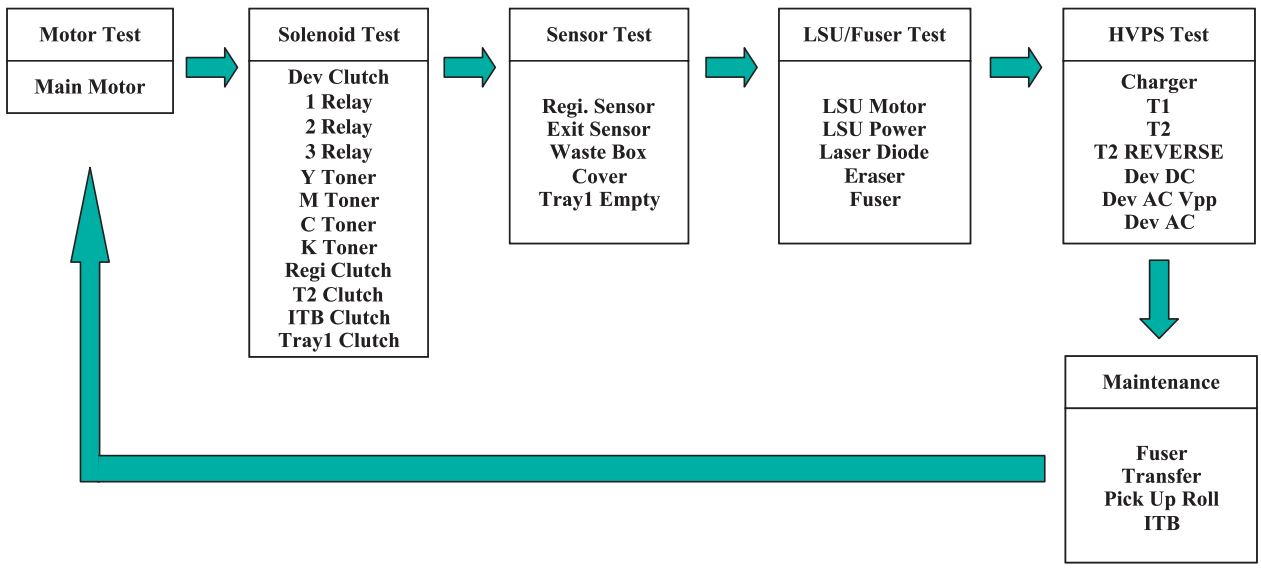
d) Then <Motor Test> appears on the initial screen

e) Should you get out of this program, press Exit of screen

4.1.6.2 Keys

Key	Discription
Exit	Close program
Update LCD	Update value (ex : sensor value)
Menu	Move to the top menu
Left/Right arrow	Move test item
Enter	Start testing or select Sub-item
Upper level	Stop testing or the upper menu

4.1.6.3 EDC Map



4.1.6.3(a) Motor Test

Item	Discription
Main Motor	If motor lock signal is normal, “Successed” message will be displayed. When motor lock signal is abnormal, “failed” message will be displayed. When “Upper Level” is pushed, “off” message will be displayed.

4.1.6.3(b) Solenoid Test

Item	Discription
Dev Clutch	When “select” key is pushed, ”Dev Clutch ON” message will be displayed. “Upper Level” is pushed, ”Dev Clutch Off” message will be displayed.
Relay 1	When “select” key is pushed, ”1 Relay ON” message will be displayed. “Upper Level” is pushed, ”1 Relay Off” message will be displayed on.
Relay 2	When “select” key is pushed, ”2 Relay ON” message will be displayed. “Upper Level” is pushed, ”2 Relay Off” message will be displayed.
Relay 3	When “select” key is pushed, ”3 Relay ON” message will be displayed. “Upper Level” is pushed, ”3 Relay Off” message will be displayed.
Y Toner	When “select” key is pushed, ”Y Toner ON” message will be displayed. “Upper Level” is pushed, ”Y Toner Off” message will be displayed.
M Toner	When “select” key is pushed, ”M Toner ON” message will be displayed. “Upper Level” is pushed, ”M Toner Off” message will be displayed.
C Toner	When “select” key is pushed, ”C Toner ON” message will be displayed. “Upper Level” is pushed, ”C Toner Off” message will be displayed.
K Toner	When “select” key is pushed, ”K Toner ON” message will be displayed. “Upper Level” is pushed, ”K Toner Off” message will be displayed.
Regi Clutch	When “select” key is pushed, ” REGI Clutch ON” message will be displayed. “Upper Level” is pushed, ” REGI Clutch Off” message will be displayed.
T2 Clutch	When “select” key is pushed, ” T2 Clutch ON” message will be displayed. “Upper Level” is pushed, ” T2 Clutch Off” message will be displayed.
ITB Clutch	When “select” key is pushed, ” ITB Clutch ON” message will be displayed. “Upper Level” is pushed, ” ITB Clutch Off” message will be displayed.
Tray1 Clutch	When “select” key is pushed, ” Tray1 Clutch ON” message will be displayed. “Upper Level” is pushed, ” Tray1 Clutch Off” message will be displayed.
Tray2 Clutch	When “select” key is pushed, ” Tray1 Clutch ON” message will be displayed. “Upper Level” is pushed, ” Tray1 Clutch Off” message will be displayed.
Regi. Sensor	If actuator is checked by sensor, "Without Paper" message will be displayed. if not, "With Paper" message will be.
Exit Sensor	If actuator is checked by sensor, "Without Paper" message will be displayed. if not, "With Paper" message will be.
Waste Box	If waste Box exists , “Installed “ message will be displayed. If not, “Not Installed “ message will be.
Cover	If cover is opened, " Opened “ message will be displayed. If not, "Closed" message will be.
Tray1 Empty	If paper exists in the tray, "With Paper" will be displayed. If not, "Without Paper" message will be.
Tray2 Empty	If paper exists in the tray, "With Paper" will be displayed. If not, "Without Paper" message will be.

4.1.6.3(c) LSU/ Fuser Test

Item	Discription
LSU Motor	If LSU motor lock signal is normal, "Successed" message will be displayed. When LSU motor lock signal is abnormal , "failed" message will be displayed. When "Upper Level" is pushed, "off" message will be displayed.
LSU Power	When "select" key is pushed, "LSU Power On" message will be displayed. If not, "LSU Power Off" message will be.
Laser Diode	When "select" key is pushed, "Laser Diode On" message will be displayed. If not, "Laser Diode Off" message will be.
Eraser	When "select" key is pushed, "Eraser On" message will be displayed . If not, "Eraser Off" message will be.
Fuser	When "select" key is pushed, "Fuser On" message will be displayed. If not, "Fuser Off" message will be.

4.1.6.3(d) HVPS Test

Item	Discription
Charger	When "select" key is pushed, "DUTY : x%*" message will be displayed. And then Left/Right arrow is selected, x% is increased or decreased. And "DUTY : x%" message will be displayed. * is disappeared. And then "select" key is pushed, x%*" message will be displayed. When "Upper Level" is pushed, * is disappeared.
T1	When "select" key is pushed, "DUTY : x%*" message will be displayed. And then Left/Right arrow is selected, x% is increased or decreased. And "DUTY : x%" message will be displayed. * is disappeared. And then "select" key is pushed, x%*" message will be displayed. When "Upper Level" is pushed, * is disappeared.
T2	When "select" key is pushed, "DUTY : x%*" message will be displayed. And then Left/Right arrow is selected, x% is increased or decreased. And "DUTY : x%" message will be displayed. * is disappeared. And then "select" key is pushed, x%*" message will be displayed. When "Upper Level" is pushed, * is disappeared.
T2 REVERSE	When "select" key is pushed, "T2 REVERSE On" message will be displayed. If not, "T2 REVERSE Off" will be.
Dev DC	When "select" key is pushed, "DUTY : x%*" message will be displayed. And then Left/Right arrow is selected, x% is increased or decreased. And "DUTY : x%" message will be displayed. * is disappeared. And then "select" key is pushed, x%*" message will be displayed. When "Upper Level" is pushed, * is disappeared.
Dev AC Vpp	When "select" key is pushed, "DUTY : x%*" message will be displayed. And then Left/Right arrow is selected, x% is increased or decreased. And "DUTY : x%" message will be displayed. * is disappeared. And then "select" key is pushed, x%*" message will be displayed. When "Upper Level" is pushed, * is disappeared.
Dev AC	When "select" key is pushed, "DUTY : x%*" message will be displayed. And then Left/Right arrow is selected, x% is increased or decreased. And "DUTY : x%" message will be displayed. * is disappeared. And then "select" key is pushed, x%*" message will be displayed. When "Upper Level" is pushed, * is disappeared.
Charger	Duty : 50% -> "-789V", Range : -81V ~ -1689V
T1	Duty : 50% -> "1159V", Range : 122V ~ 2188V
T2	Duty : 50% -> "2552V", Range : 264V ~ 4730V
Supply DC	Duty : 50% -> "-269V", Range : -1V ~ -591V
AC, Vpp	Duty : 50%-> "1210V" , Range : 800V ~ 2160V

4.1.6.3(e) Maintenance

Item	Discription
Fuser	When "select" key is pushed, "Initialized" message will be displayed. When "Upper Level" is pushed, "Off" message is disappeared.
Transfer	When "select" key is pushed, "Initialized" message will be displayed. When "Upper Level" is pushed, "Off" message is disappeared.
FCF Pick Up Roll	When "select" key is pushed, "Initialized" message will be displayed. When "Upper Level" is pushed, "Off" message is disappeared.
SCF Pick Up Roll	When "select" key is pushed, "Initialized" message will be displayed. When "Upper Level" is pushed, "Off" message is disappeared.
ITB	When "select" key is pushed, "Initialized" message will be displayed. When "Upper Level" is pushed, "Off" message is disappeared.

4.1.6.3(f) Error list and recovery

▶Paper Empty / Paper Mismatch
- Load specified paper in the tray 1
  · Paper does not exist in the tray1
  · Load Paper, When you still want to continue printing
- Paper mismatch in the tray 1
  · Paper is mismatched
  · Press stop key for a while, When you still want to continue printing

▶Cover Open
- Cover Open
  · Cover is opened
  · Close the door, When you still want to continue printing

▶Waster Tank Full or not installed
- Waste Tank Full
  · Toner of Waste toner box is full
  · Empty or Insert the waste toner box

▶Paper Jam
- Paper Jam at the tray1
  · Paper is not picked up
  · Cover Open /Close, When you still want to continue printing

- Paper Jam inside printer
  · There is a paper inside printer
  · After cover Open , Paper must be removed, and then close the cover

- Paper Jam at the paper exit area
  - · There is a paper at exit area
  - · After cover Open , Paper must be removed, and then close the cover

- Motor Lock Error
  - · Motor does not run or runs abnormal speed
  - · Motor or Main board must be checked

- LSU Motor Lock Error
  - · LSU motor does not run or runs abnormal speed
  - · Hsync is not detected
  - · LSU or Main board must be checked

- Transfer Belt Error
  - · ITB home sensor is not checked for a normal time
  - · ITB must be checked

- Fuser Over Heat error
  - · Temperature of fuser is high
  - · Fuser or Main board must be checked

- Fuser Low Heat error
  - · Temperature of fuser is low
  - · Fuser or Main board must be checked

- Fuser Open Heat error
  - · Temperature of fuser is less than 50℃ in warmup state.
  - · Fuser or Main board must be checked

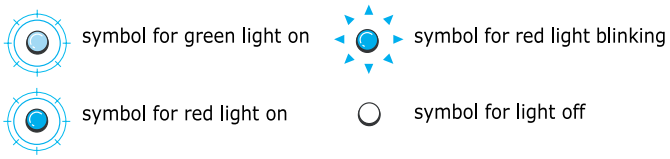
- Dev. Home error
  - · Home of Development is not checked or checked at the abnormal time
  - · Clutch of Development or Main board must be checked

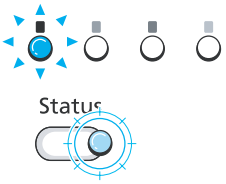
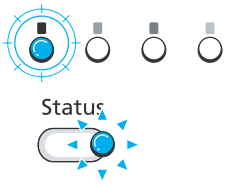
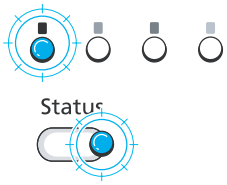
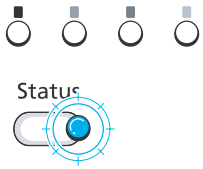
- ADC not Confirm Error
  - · Signal of confirmation for ADC is not detected
  - · Main board must be checked

4.1.7 Error Message

When the printer experiences an error, the control panel will indicate an error message with the indicator lights and the Smart Panel program window will display to show the printer's status or errors. Find the light pattern below that matches the printer light pattern and follow the solutions to clear the error.

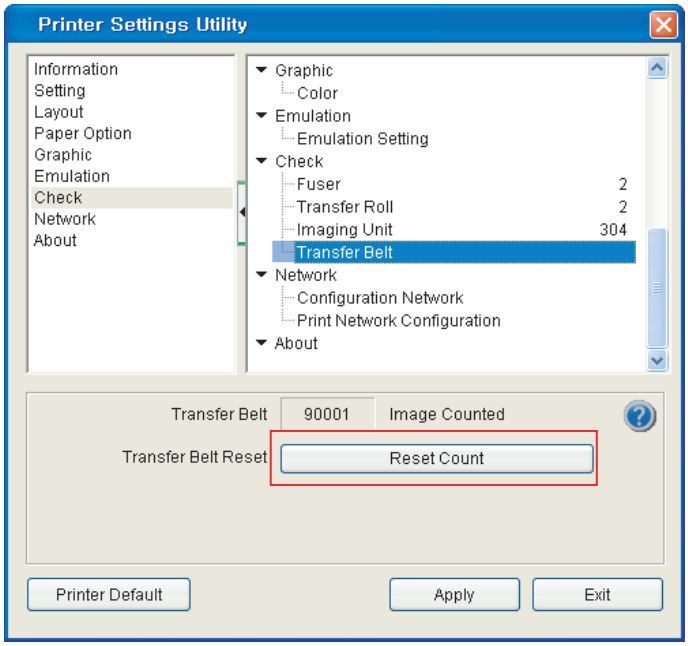
LED status legend



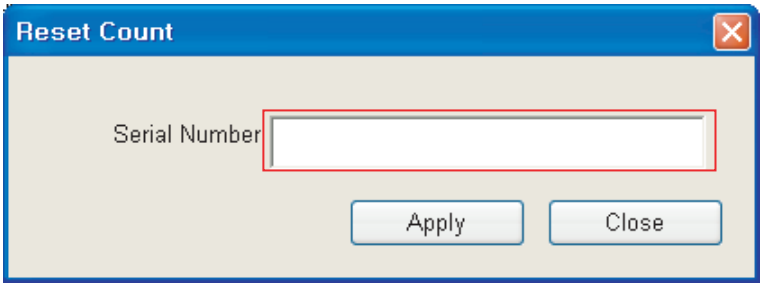
LED pattern	Possible Problem and Solution
	The blinking toner cartridge is low. Order a new toner cartridge. You can temporarily improve print quality by redistributing the toner.
	The lighting toner cartridge is empty. Remove the old toner cartridge and install a new one.
	· The blinking toner cartridge is totally exhausted. Remove the old toner cartridge and install a new one. · The blinking toner cartridge is wrong. Only install a Samsung toner cartridge, designed for your printer.
	· A paper jam has occurred. To solve the problem. · The front cover is open. Close the front cover. · There is no paper in the tray. Load paper in the tray. · The waste toner container is open or full. Check the container. · Your system has some problems. If this problem occurs, contact your service representative.

4.1.8 ITB Unit Reset

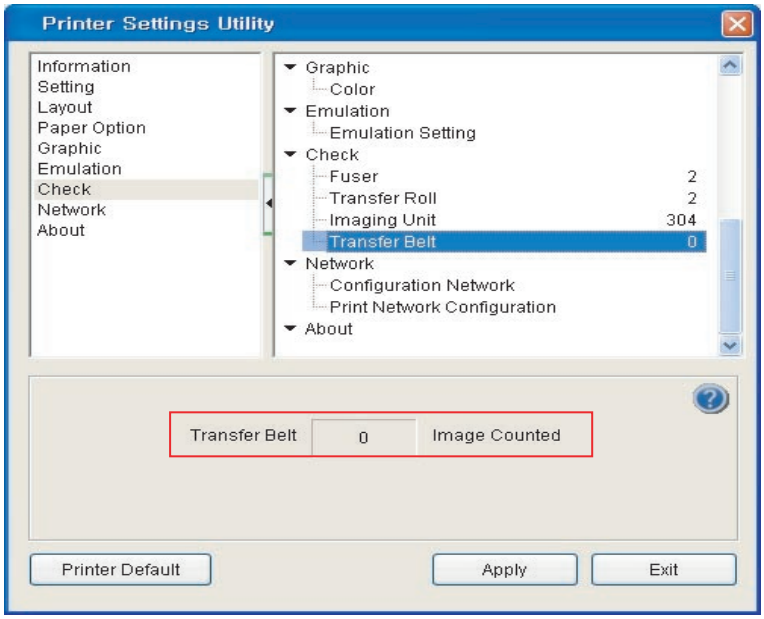
1. If your printer become special condition, the "Reset Count" button will display on the Smart panel. At that time, click the button.



2. And then the pop-up below appears. . If you enter the ITB S/N and click "Apply", the count will be clear. (Max 2 times)



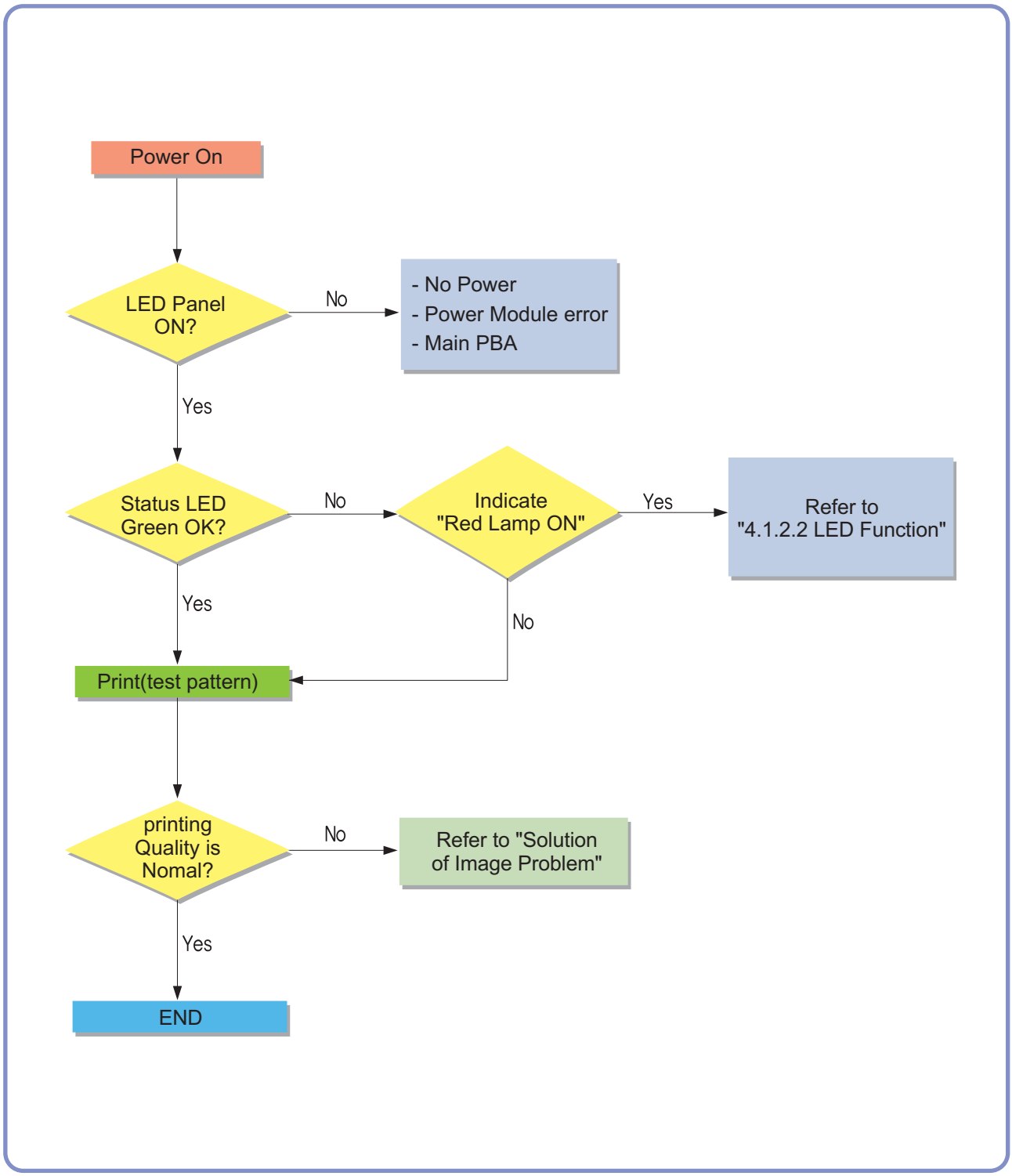
3. After reboot the your computer, you can check the cleared count as shown the picture below.



4.2 Troubleshooting

4.2.1 Procedure of Checking the Symptoms

Before attempting to repair the printer first obtain a detailed description of the problem from the customer.



4.2.2 Troubleshooting Checklist

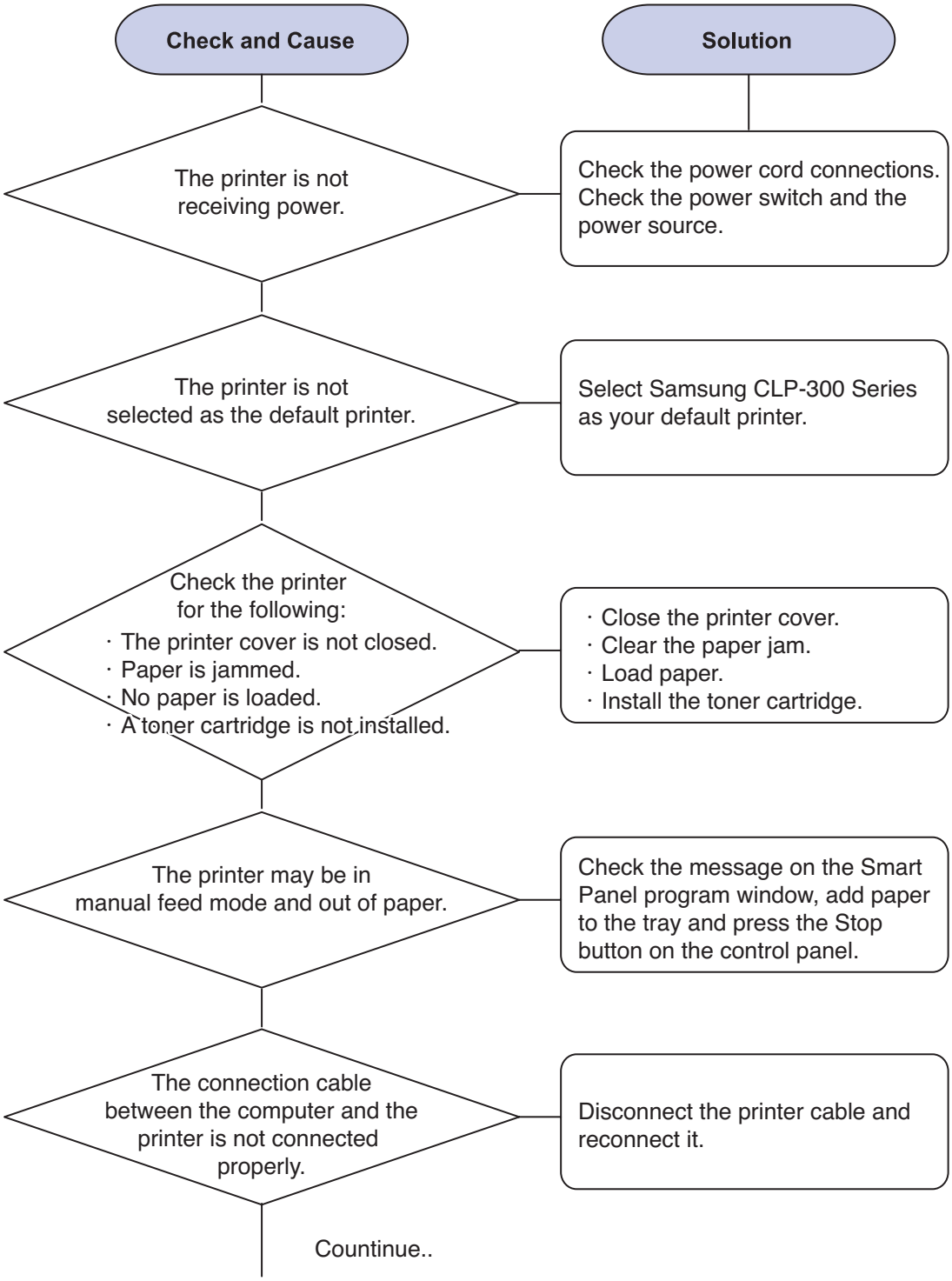
If the printer is not working properly, consult the following checklist. If the printer does not pass a step, follow the corresponding troubleshooting suggestions.

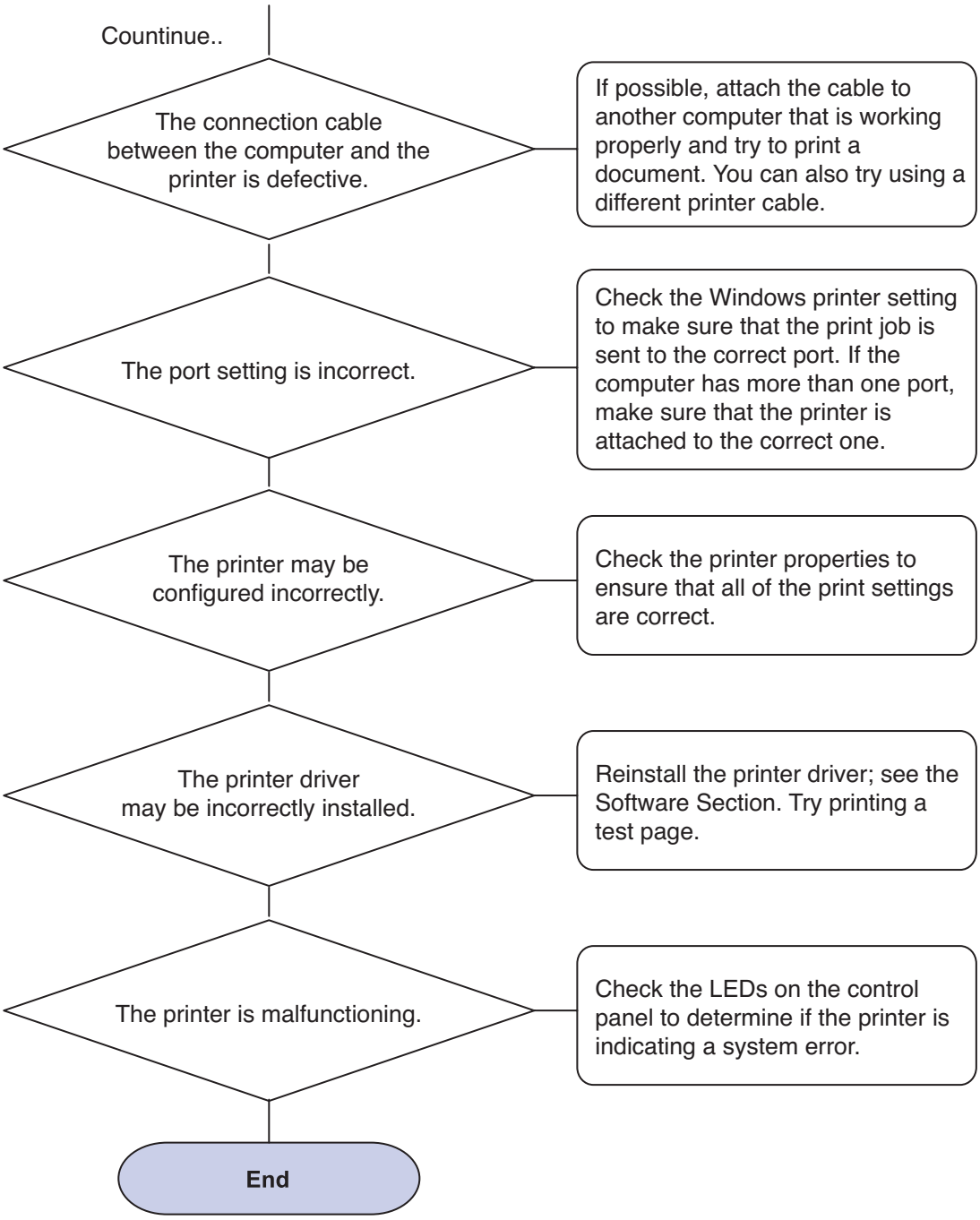
Status	Response
Make sure that the Status LED on the control panel green and "Ready" is shown on the Smart Panel program window.	· If the Status LED is off, check the power cord connection. Check the power switch. Check the power source by plugging the power cord into another outlet. · If the Status LED blinks or lights red, solve the problems.
Print a demo page to verify that the printer is feeding paper correctly.	· If a demo page does not print, check the paper supply in the paper tray. · If the paper jams in the printer, go to "Clearing Paper Jams"
Check the demo page to see if it is printed correctly.	If there is a print quality problem, go to "Solving Print Quality Problems"
Print a short document from a software application to verify that the computer and printer are connected and communicating correctly.	· If the page does not print, check the cable connection between the printer and the computer. · Check the print queue or print spooler to see if the printer has been paused. · Check the software application to ensure that you are using the proper printer driver and communication port. If the page is interrupted during printing, go to "Solving General Printing Problems"
If completing the checklist does not resolve the printer problem, check the following troubleshooting sections.	· See "Solving General Printing Problems" · See "Solving Print Quality Problems" · See "Common Windows Problems" · See "Common Macintosh Problems" · See "Common Linux Problems"

4.2.3 Solving General Printing Problems

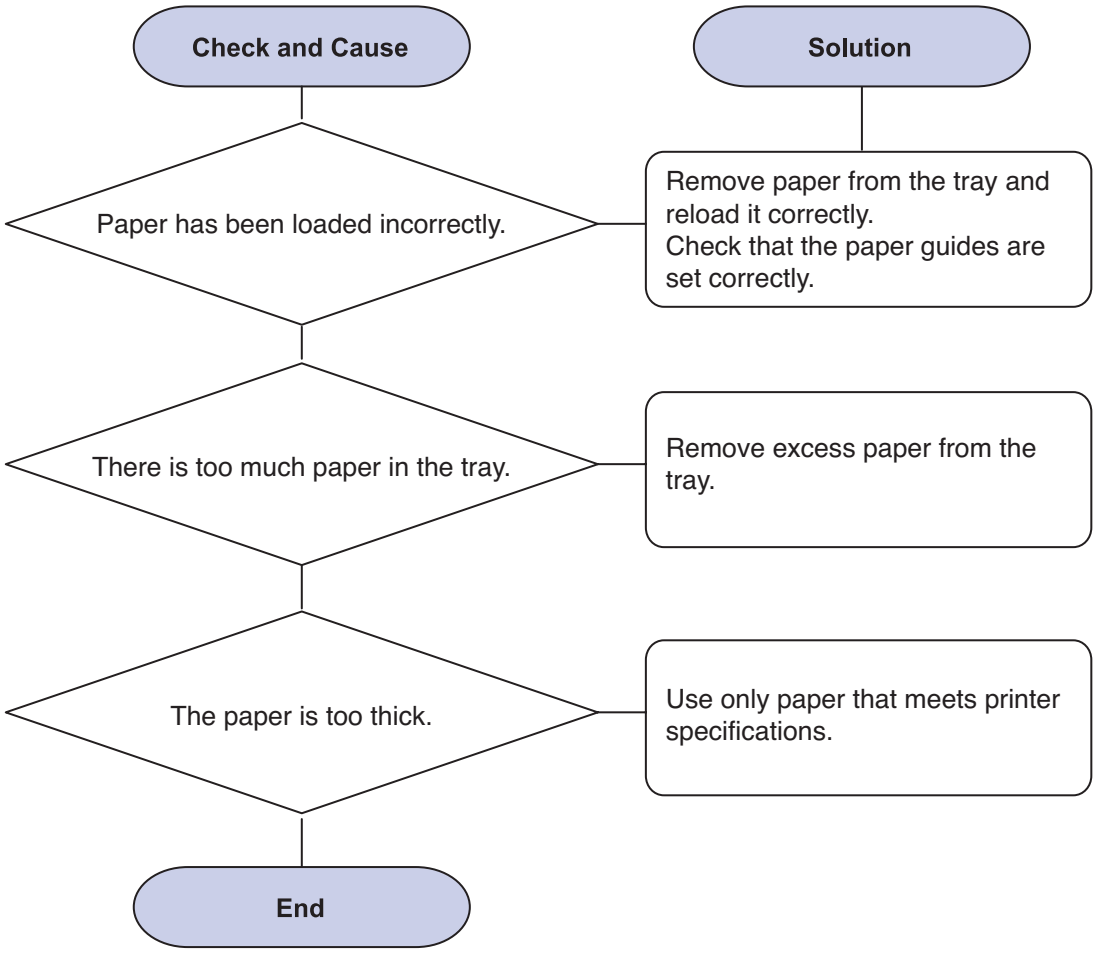
For problems with the operation of your printer, refer to the table for suggested solutions.

• **Description** The printer does not print.

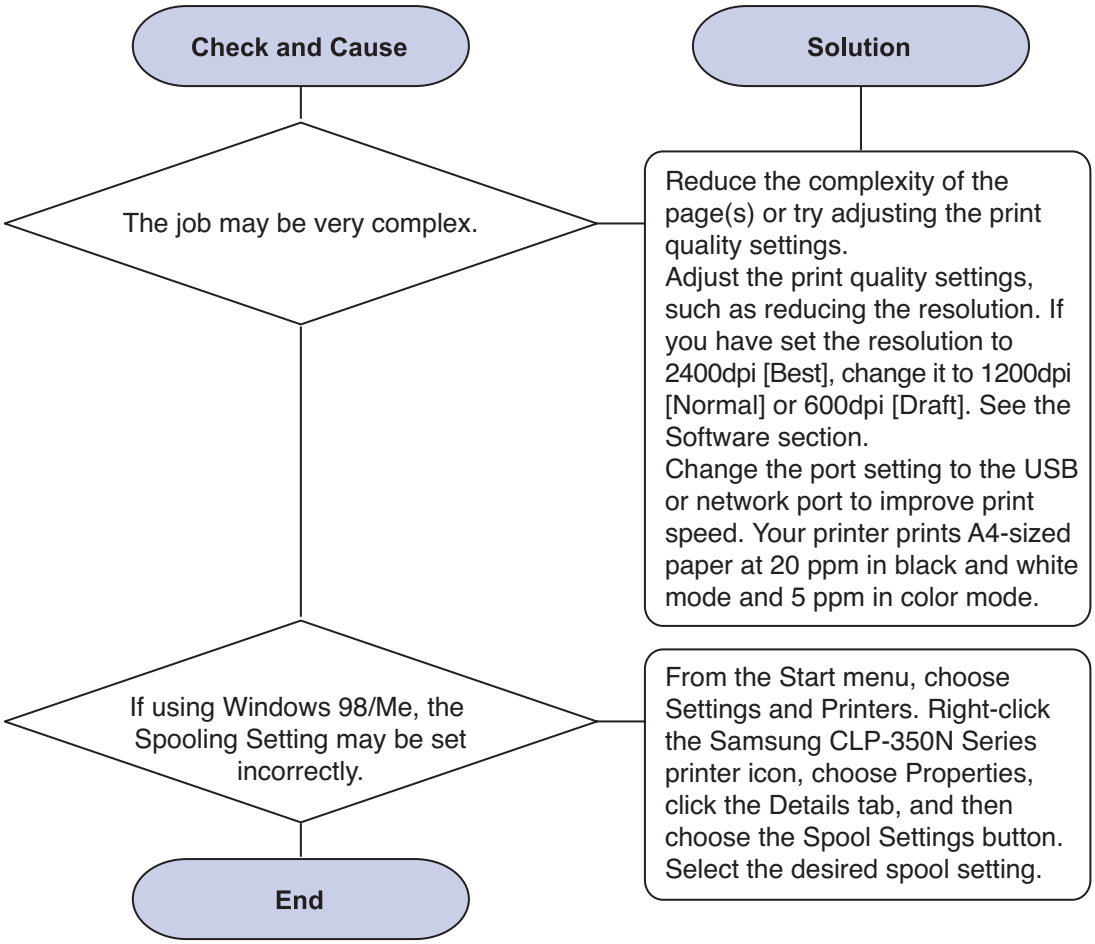

Check and Cause
Solution
The printer is not receiving power.
Check the power cord connections. Check the power switch and the power source.
The printer is not selected as the default printer.
Select Samsung CLP-300 Series as your default printer.
Check the printer for the following:
· The printer cover is not closed.
· Paper is jammed.
· No paper is loaded.
· A toner cartridge is not installed.
· Close the printer cover.
· Clear the paper jam.
· Load paper.
· Install the toner cartridge.
The printer may be in manual feed mode and out of paper.
Check the message on the Smart Panel program window, add paper to the tray and press the Stop button on the control panel.
The connection cable between the computer and the printer is not connected properly.
Disconnect the printer cable and reconnect it.
Countinue..


Countinue..
The connection cable between the computer and the printer is defective.
If possible, attach the cable to another computer that is working properly and try to print a document. You can also try using a different printer cable.
The port setting is incorrect.
Check the Windows printer setting to make sure that the print job is sent to the correct port. If the computer has more than one port, make sure that the printer is attached to the correct one.
The printer may be configured incorrectly.
Check the printer properties to ensure that all of the print settings are correct.
The printer driver may be incorrectly installed.
Reinstall the printer driver; see the Software Section. Try printing a test page.
The printer is malfunctioning.
Check the LEDs on the control panel to determine if the printer is indicating a system error.
End

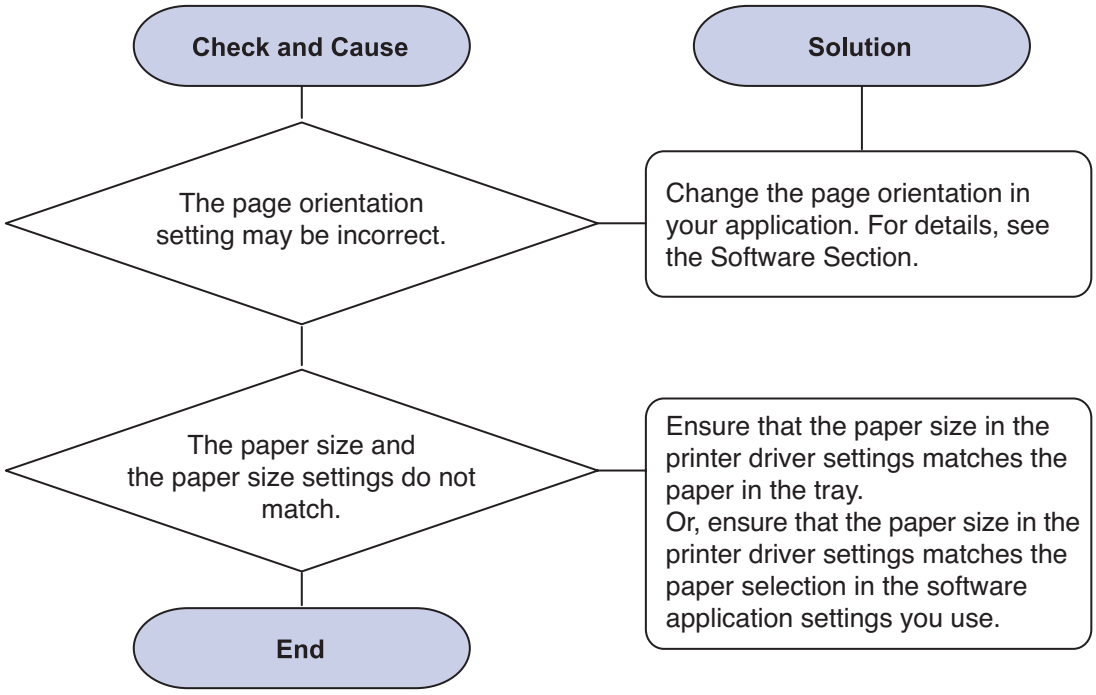
• **Description** Paper does not feed into the printer.


Check and Cause
Solution
Paper has been loaded incorrectly.
Remove paper from the tray and reload it correctly.
Check that the paper guides are set correctly.
There is too much paper in the tray.
Remove excess paper from the tray.
The paper is too thick.
Use only paper that meets printer specifications.
End

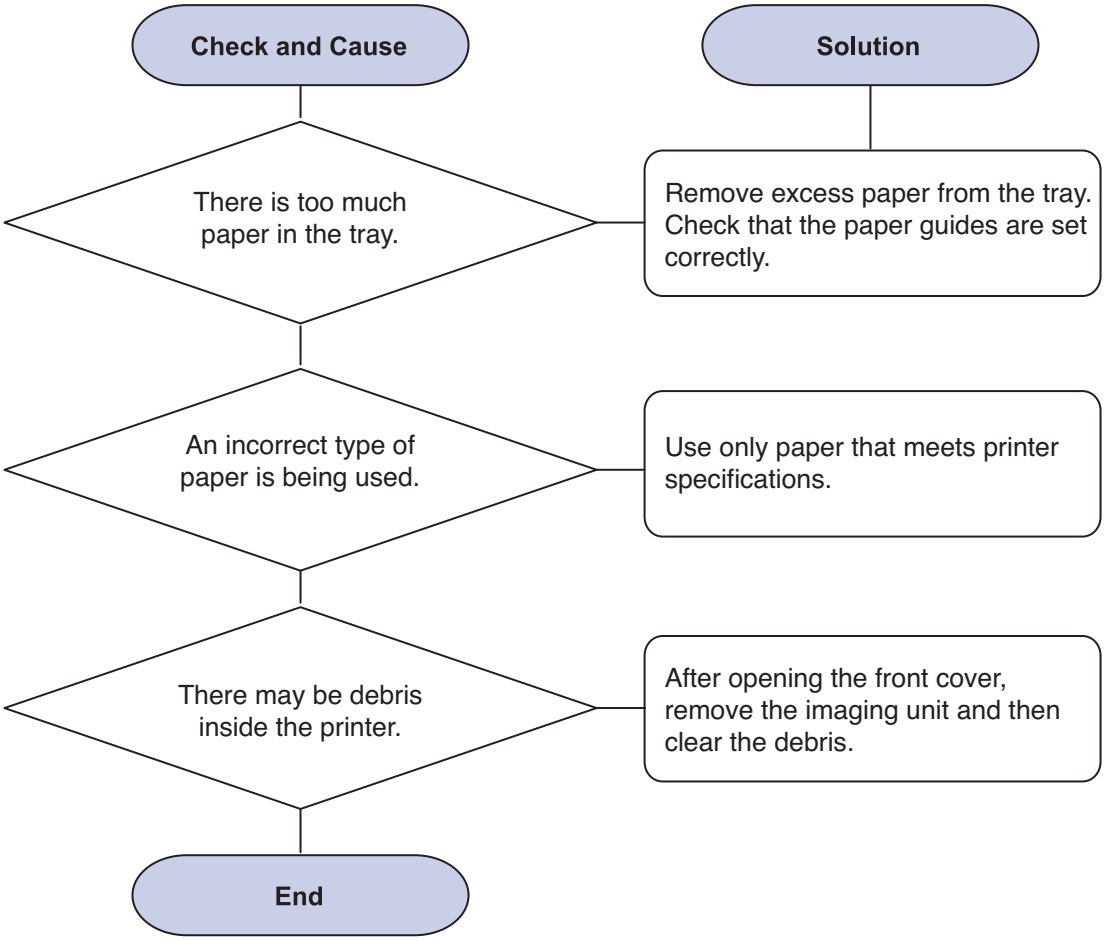
• **Description** A print job is extremely slow.


Check and Cause
Solution
The job may be very complex.
Reduce the complexity of the page(s) or try adjusting the print quality settings.
Adjust the print quality settings, such as reducing the resolution. If you have set the resolution to 2400dpi [Best], change it to 1200dpi [Normal] or 600dpi [Draft]. See the Software section.
Change the port setting to the USB or network port to improve print speed. Your printer prints A4-sized paper at 20 ppm in black and white mode and 5 ppm in color mode.
If using Windows 98/Me, the Spooling Setting may be set incorrectly.
From the Start menu, choose Settings and Printers. Right-click the Samsung CLP-350N Series printer icon, choose Properties, click the Details tab, and then choose the Spool Settings button. Select the desired spool setting.
End

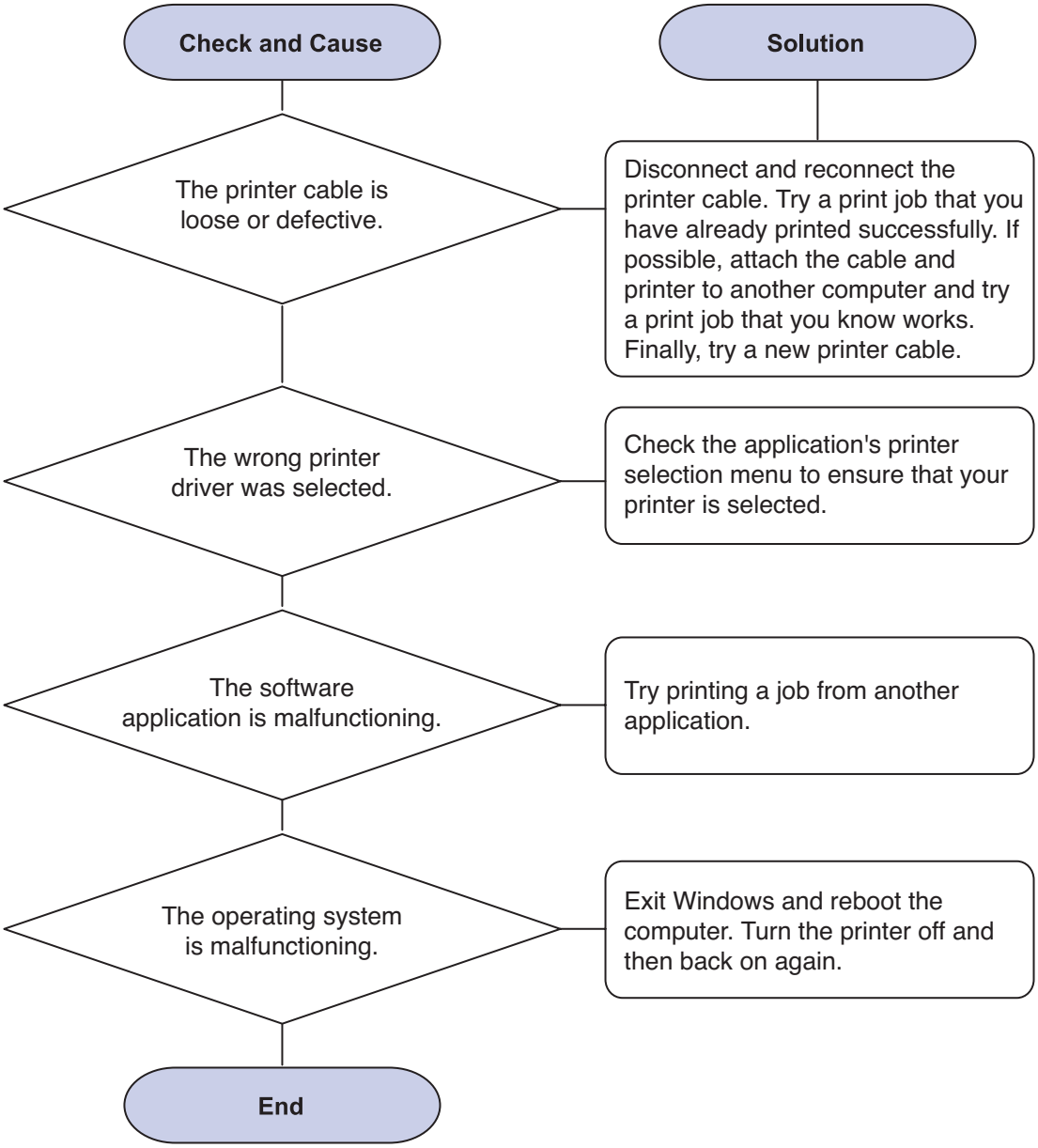
• **Description** Half the page is blank.


Check and Cause
Solution
The page orientation setting may be incorrect.
Change the page orientation in your application. For details, see the Software Section.
The paper size and the paper size settings do not match.
Ensure that the paper size in the printer driver settings matches the paper in the tray.
Or, ensure that the paper size in the printer driver settings matches the paper selection in the software application settings you use.
End

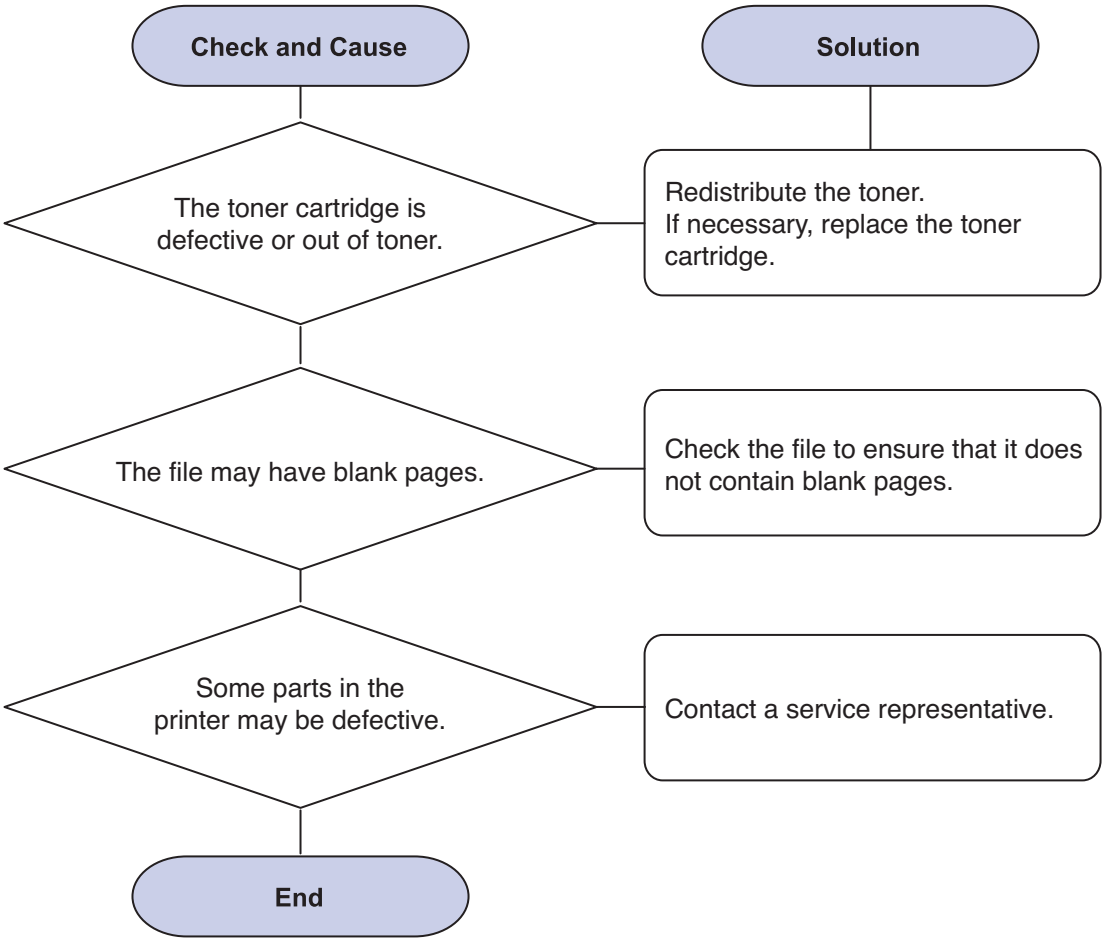
• **Description** The paper keeps jamming.


Check and Cause
Solution
There is too much paper in the tray.
Remove excess paper from the tray. Check that the paper guides are set correctly.
An incorrect type of paper is being used.
Use only paper that meets printer specifications.
There may be debris inside the printer.
After opening the front cover, remove the imaging unit and then clear the debris.
End

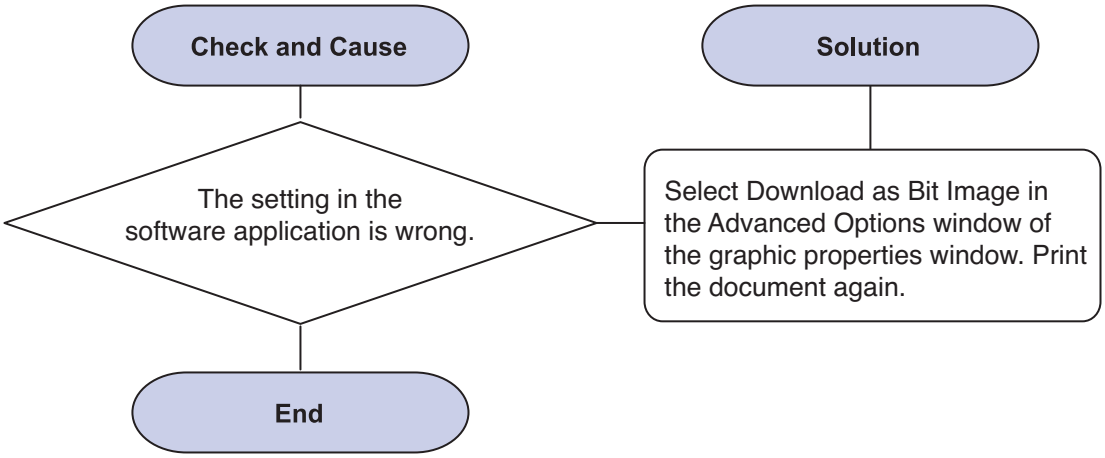
• **Description** The printer prints, but the text is wrong, garbled, or incomplete.


Check and Cause
Solution
The printer cable is loose or defective.
Disconnect and reconnect the printer cable. Try a print job that you have already printed successfully. If possible, attach the cable and printer to another computer and try a print job that you know works. Finally, try a new printer cable.
The wrong printer driver was selected.
Check the application's printer selection menu to ensure that your printer is selected.
The software application is malfunctioning.
Try printing a job from another application.
The operating system is malfunctioning.
Exit Windows and reboot the computer. Turn the printer off and then back on again.
End

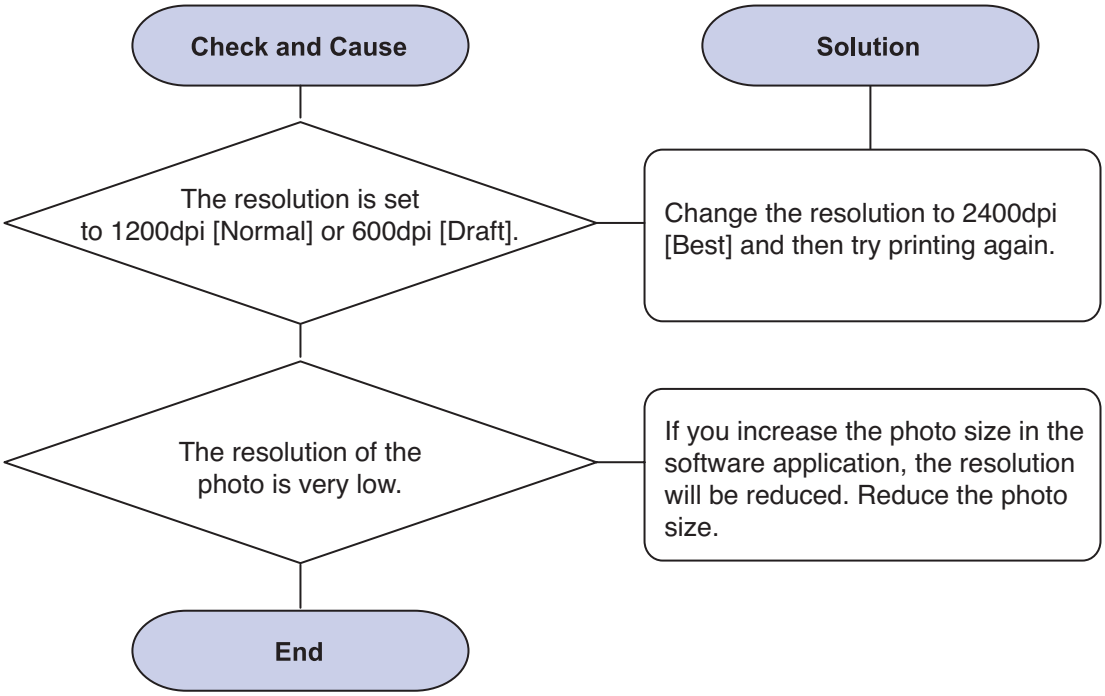
• **Description** Pages print, but are blank.


Check and Cause
Solution
The toner cartridge is defective or out of toner.
Redistribute the toner. If necessary, replace the toner cartridge.
The file may have blank pages.
Check the file to ensure that it does not contain blank pages.
Some parts in the printer may be defective.
Contact a service representative.
End

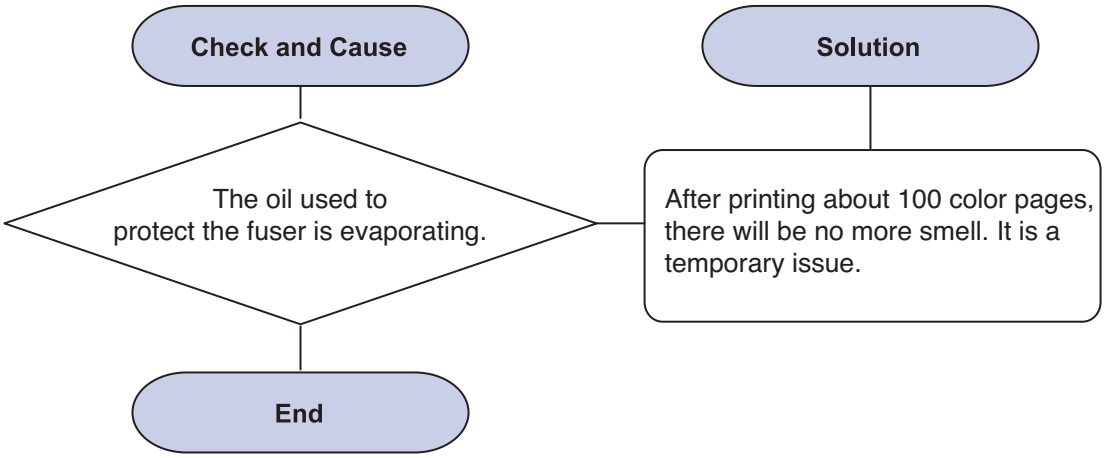
• **Description** When you are using Windows 98, the illustrations print incorrectly from Adobe Illustrator.


Check and Cause
Solution
The setting in the software application is wrong.
Select Download as Bit Image in the Advanced Options window of the graphic properties window. Print the document again.
End

• **Description** The print quality of photos is not good.
Images are not clear.


Check and Cause
Solution
The resolution is set to 1200dpi [Normal] or 600dpi [Draft].
Change the resolution to 2400dpi [Best] and then try printing again.
The resolution of the photo is very low.
If you increase the photo size in the software application, the resolution will be reduced. Reduce the photo size.
End

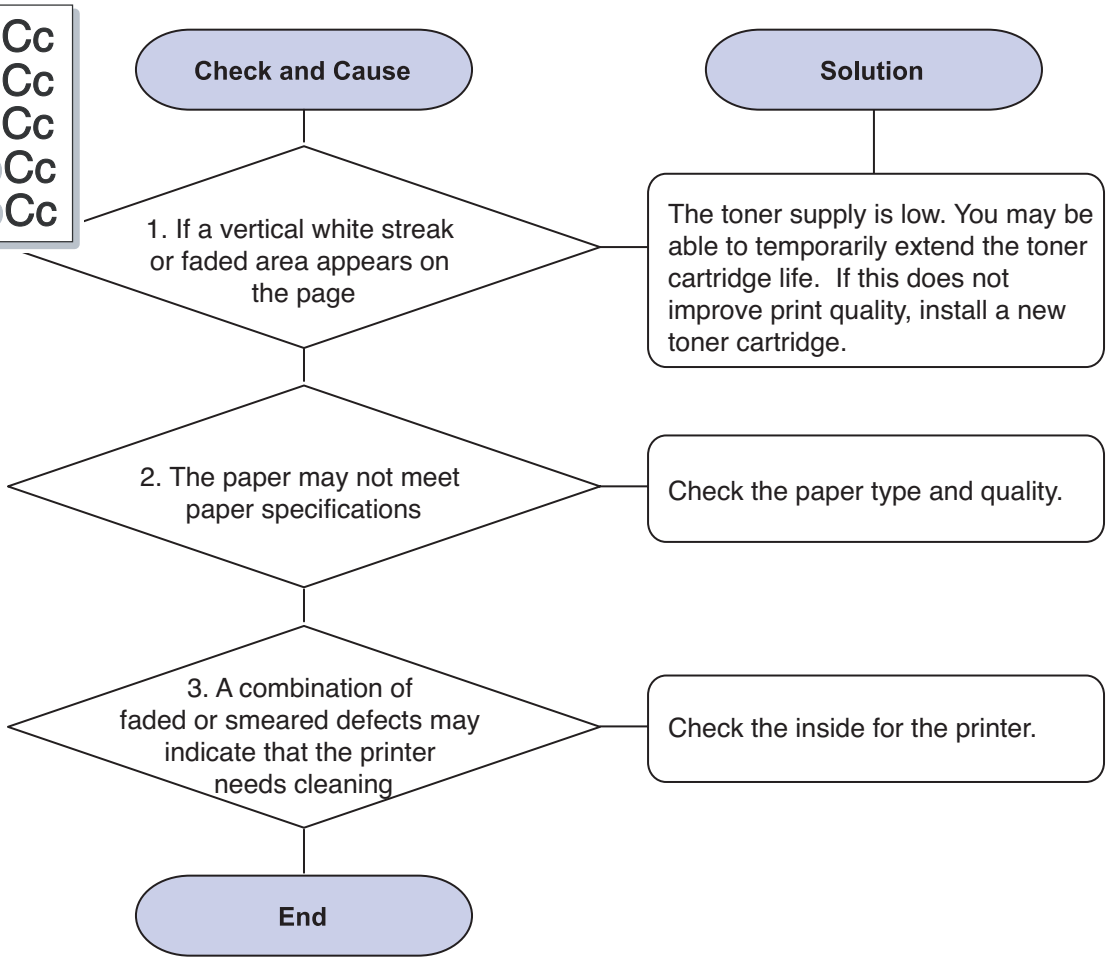
• **Description** Your printer has an odd smell during initial use.


Check and Cause
Solution
The oil used to
protect the fuser is evaporating.
After printing about 100 color pages, there will be no more smell. It is a temporary issue.
End

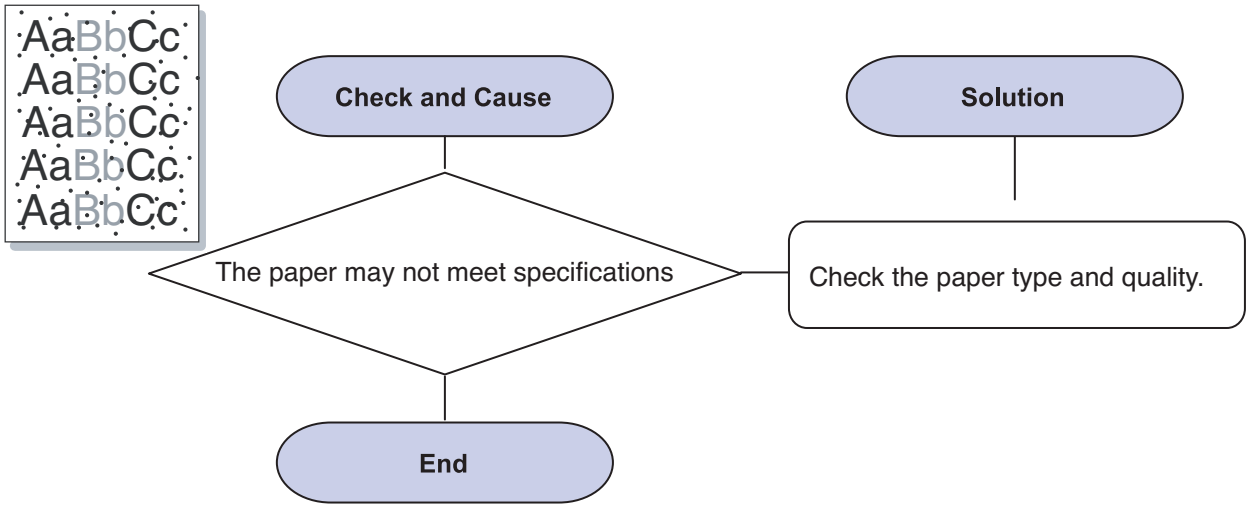
4.2.4 Solving Print Quality Problems

Dirt inside of the printer or improper paper loading may reduce print quality. See the table below to troubleshoot problems.

1) Light or faded print

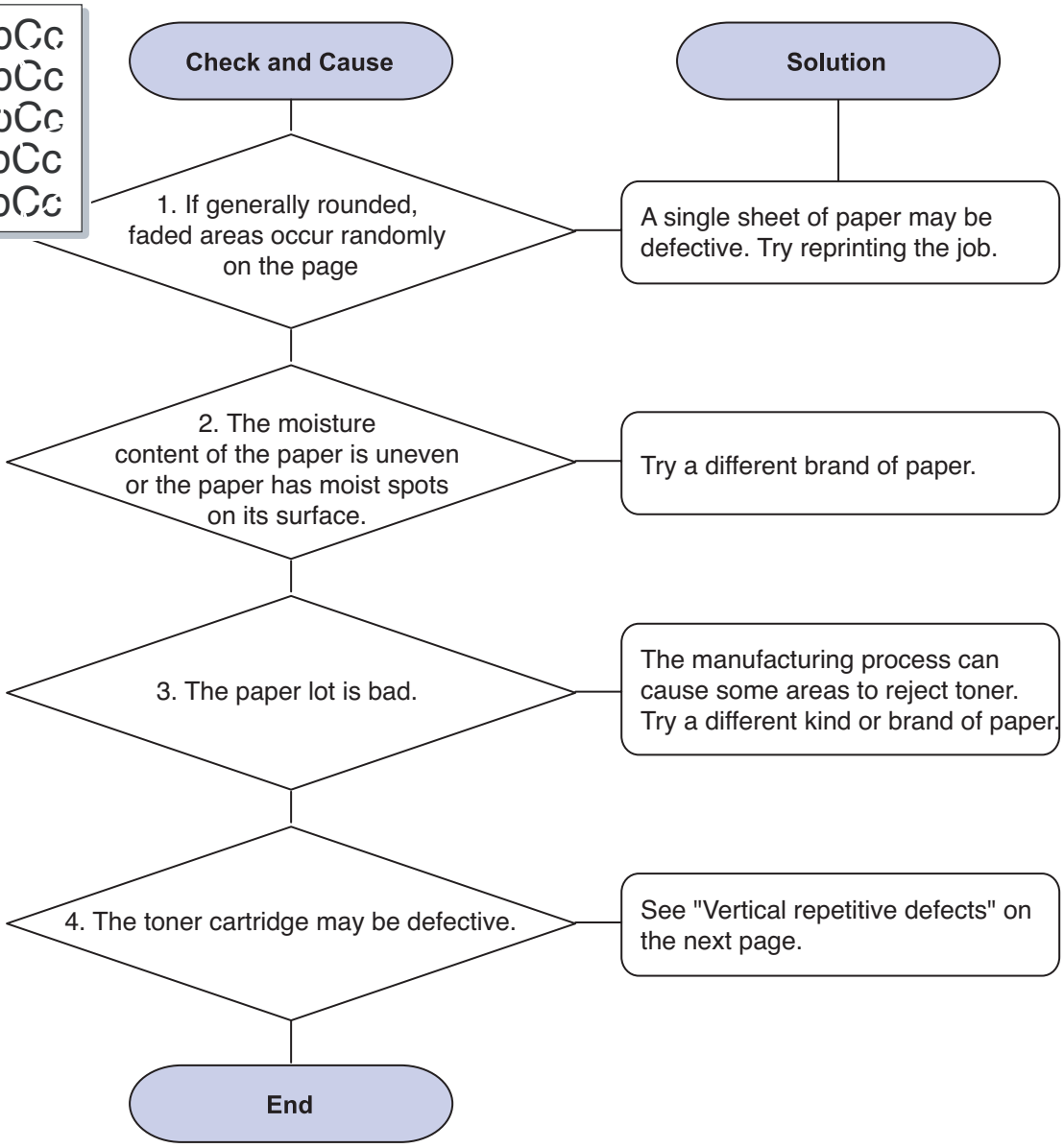

Check and Cause
Solution
1. If a vertical white streak or faded area appears on the page
The toner supply is low. You may be able to temporarily extend the toner cartridge life. If this does not improve print quality, install a new toner cartridge.
2. The paper may not meet paper specifications
Check the paper type and quality.
3. A combination of faded or smeared defects may indicate that the printer needs cleaning
Check the inside for the printer.
End

2) Toner specks

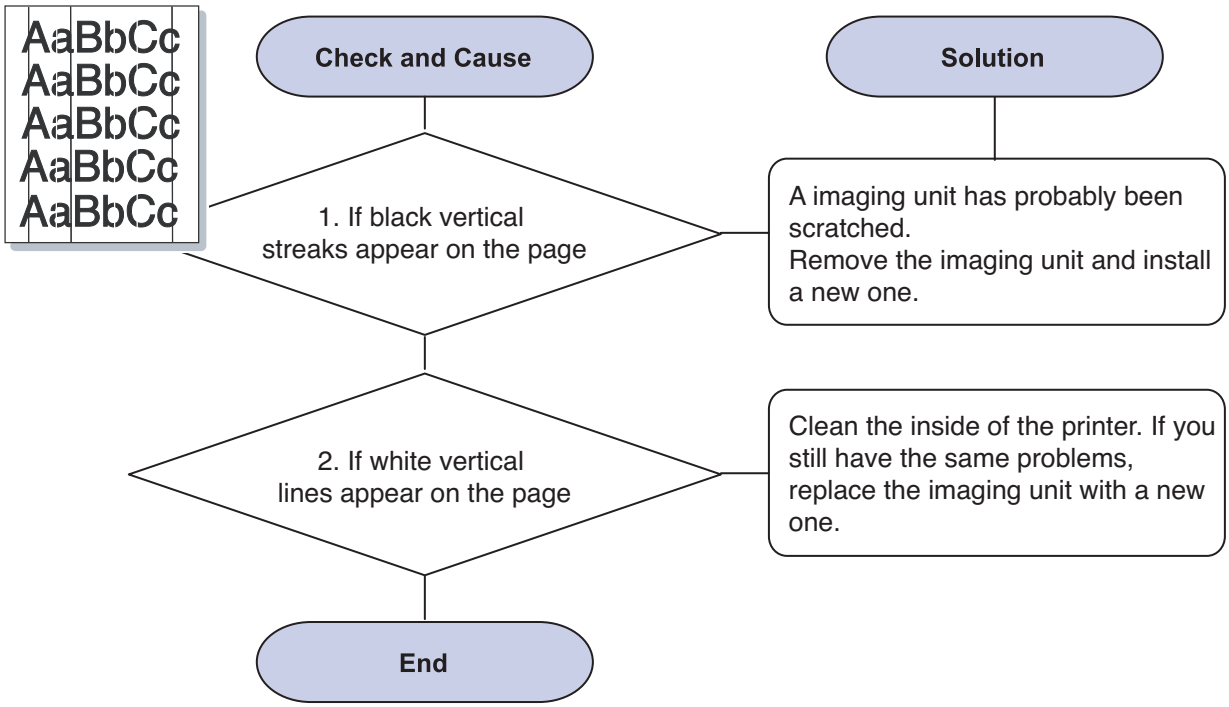


3) Dropouts

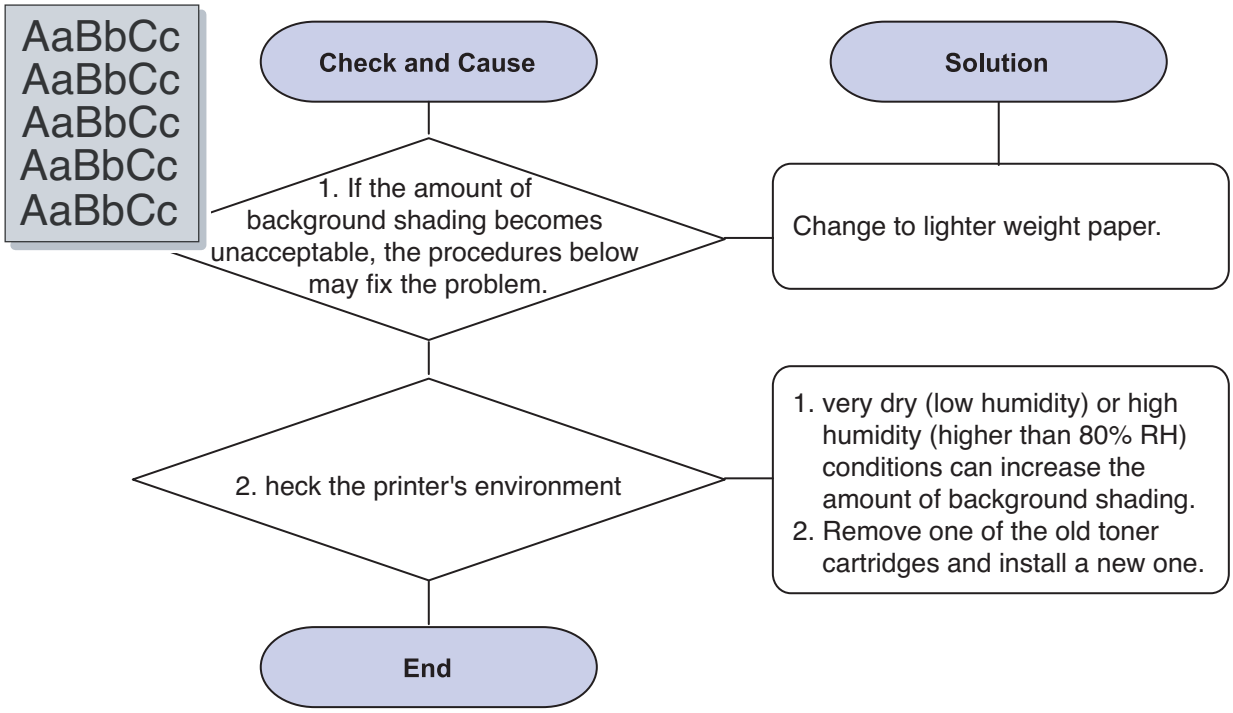
AaBbCc
AaBbCc
AaBbCc
AaBbCc
AaBbCc


Check and Cause
Solution
1. If generally rounded, faded areas occur randomly on the page
A single sheet of paper may be defective. Try reprinting the job.
2. The moisture content of the paper is uneven or the paper has moist spots on its surface.
Try a different brand of paper.
3. The paper lot is bad.
The manufacturing process can cause some areas to reject toner. Try a different kind or brand of paper.
4. The toner cartridge may be defective.
See "Vertical repetitive defects" on the next page.
End

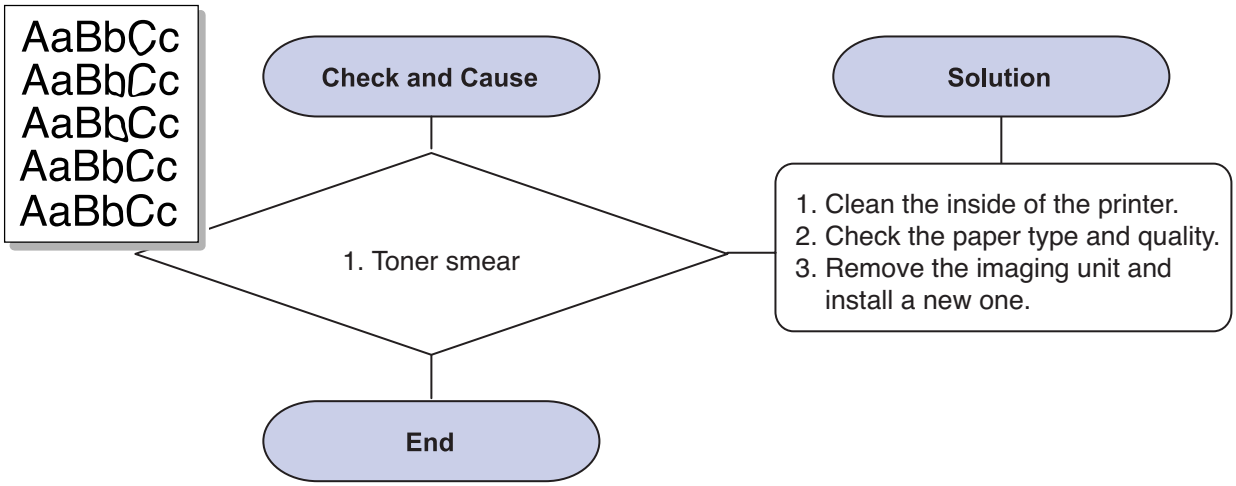
4) Vertical lines


AaBbCc
AaBbCc
AaBbCc
AaBbCc
AaBbCc
Check and Cause
Solution
1. If black vertical streaks appear on the page
A imaging unit has probably been scratched.
Remove the imaging unit and install a new one.
2. If white vertical lines appear on the page
Clean the inside of the printer. If you still have the same problems, replace the imaging unit with a new one.
End

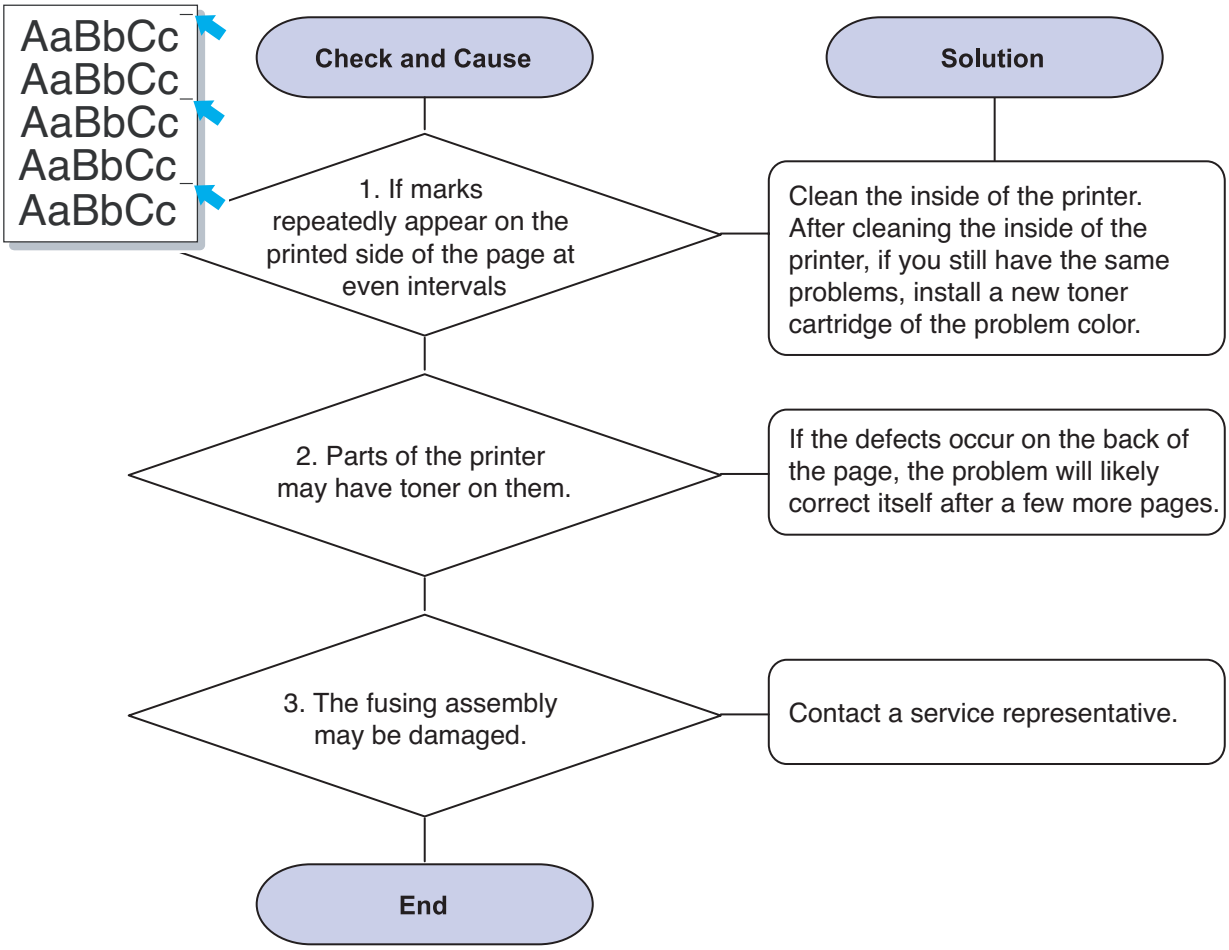
5) Color or Black background


AaBbCc
AaBbCc
AaBbCc
AaBbCc
AaBbCc
Check and Cause
Solution
1. If the amount of background shading becomes unacceptable, the procedures below may fix the problem.
Change to lighter weight paper.
2. heck the printer's environment
1. very dry (low humidity) or high humidity (higher than 80% RH) conditions can increase the amount of background shading.
2. Remove one of the old toner cartridges and install a new one.
End

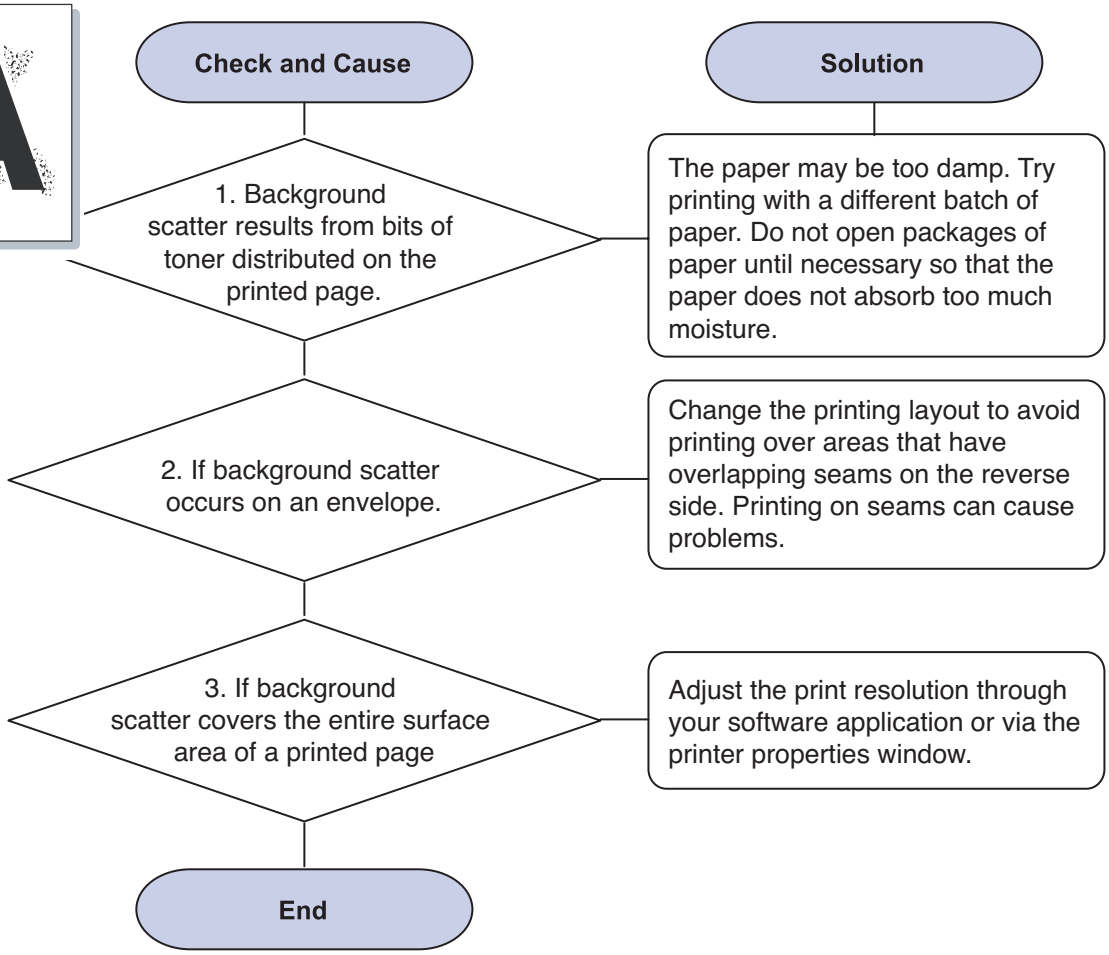
6) Toner smear



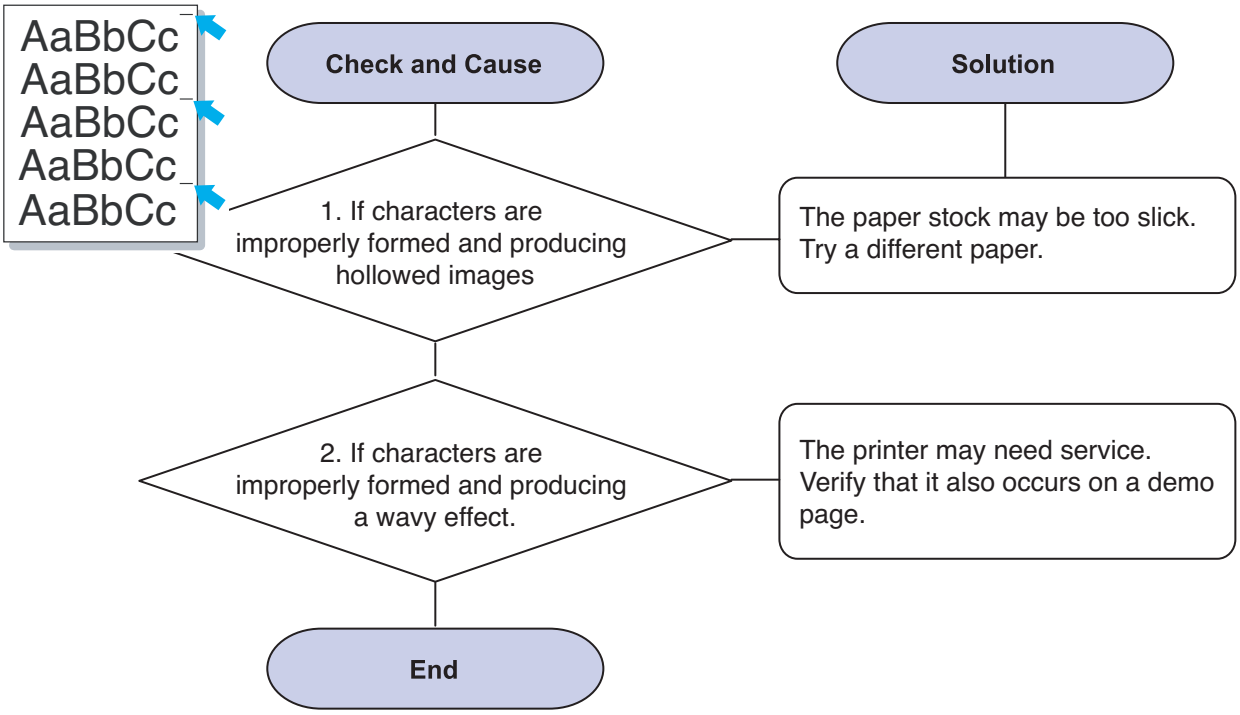
7) Vertical repetitive defects


AaBbCc
AaBbCc
AaBbCc
AaBbCc
AaBbCc
Check and Cause
Solution
1. If marks repeatedly appear on the printed side of the page at even intervals
Clean the inside of the printer. After cleaning the inside of the printer, if you still have the same problems, install a new toner cartridge of the problem color.
2. Parts of the printer may have toner on them.
If the defects occur on the back of the page, the problem will likely correct itself after a few more pages.
3. The fusing assembly may be damaged.
Contact a service representative.
End

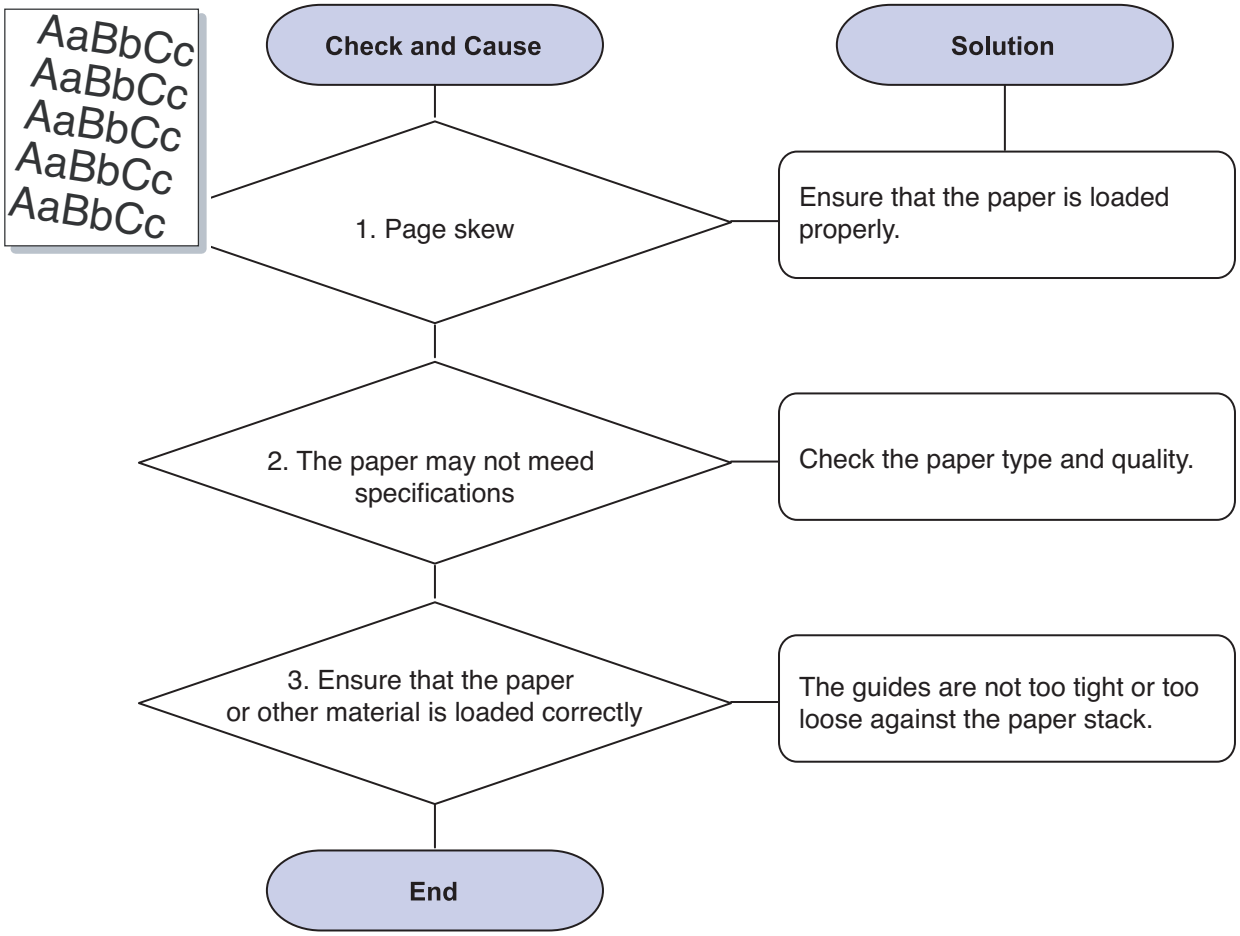
8) Background scatter


Check and Cause
Solution
1. Background scatter results from bits of toner distributed on the printed page.
The paper may be too damp. Try printing with a different batch of paper. Do not open packages of paper until necessary so that the paper does not absorb too much moisture.
2. If background scatter occurs on an envelope.
Change the printing layout to avoid printing over areas that have overlapping seams on the reverse side. Printing on seams can cause problems.
3. If background scatter covers the entire surface area of a printed page
Adjust the print resolution through your software application or via the printer properties window.
End

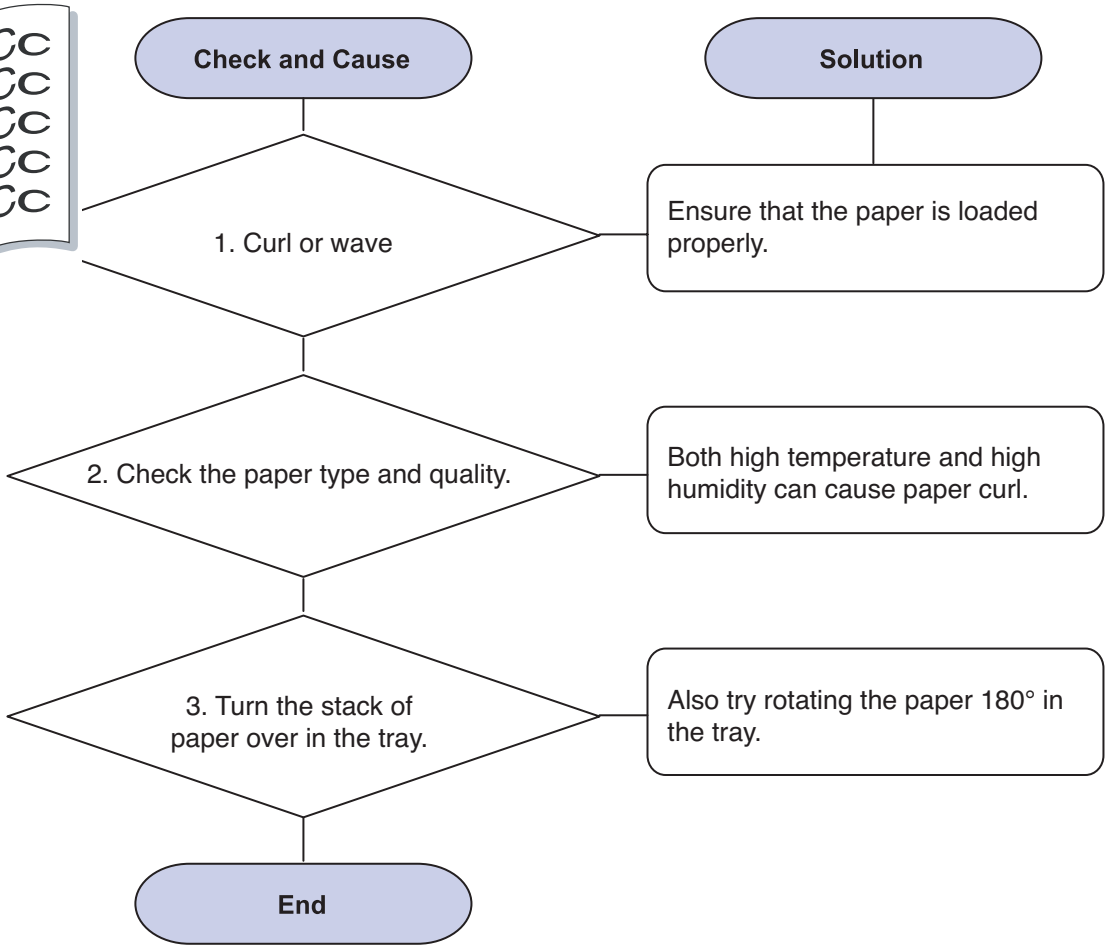
9) Misformed characters


AaBbCc
AaBbCc
AaBbCc
AaBbCc
AaBbCc
Check and Cause
Solution
1. If characters are improperly formed and producing hollowed images
The paper stock may be too slick. Try a different paper.
2. If characters are improperly formed and producing a wavy effect.
The printer may need service. Verify that it also occurs on a demo page.
End

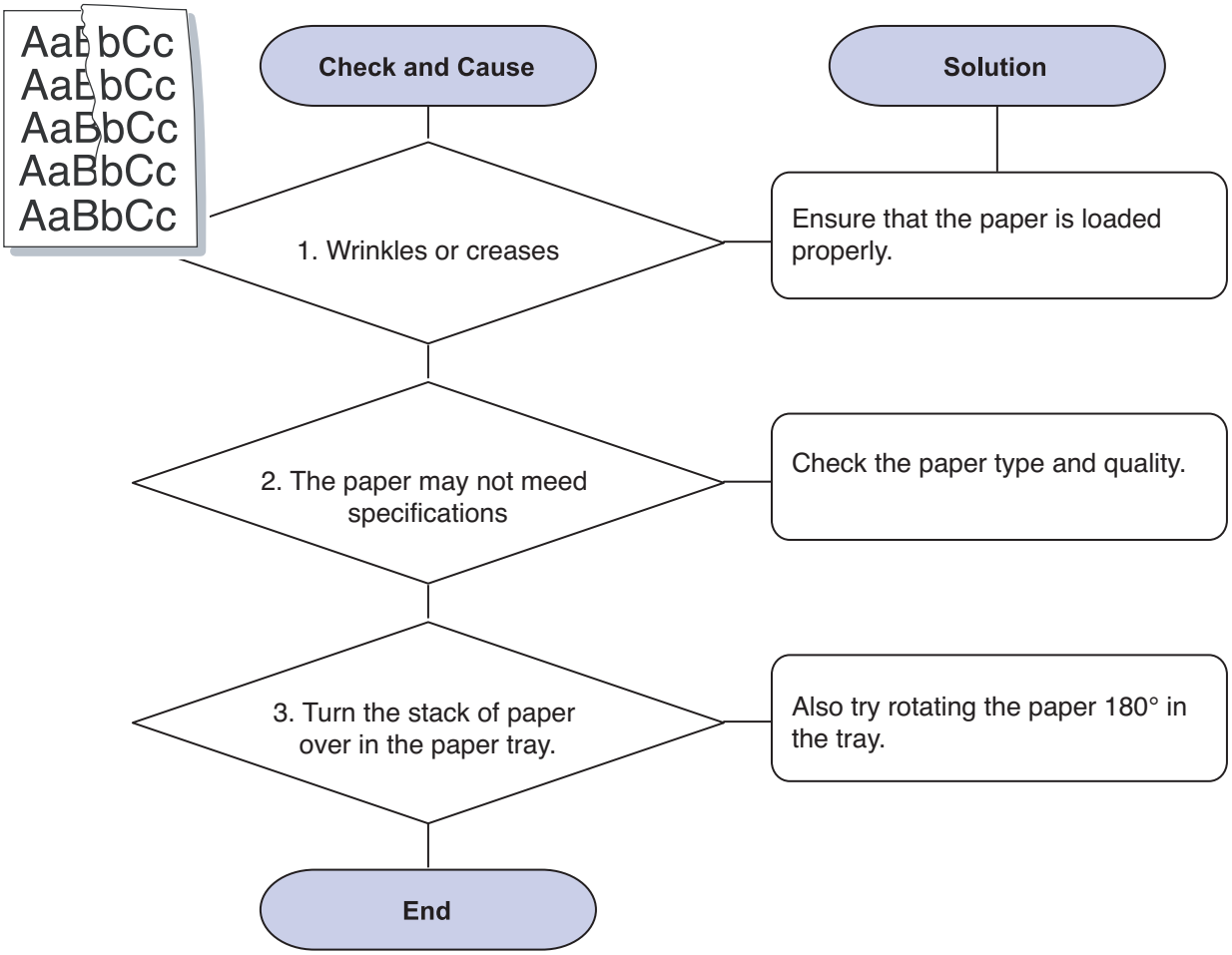
10) Page skew


AaBbCc
AaBbCc
AaBbCc
AaBbCc
AaBbCc
Check and Cause
Solution
1. Page skew
Ensure that the paper is loaded properly.
2. The paper may not meed specifications
Check the paper type and quality.
3. Ensure that the paper or other material is loaded correctly
The guides are not too tight or too loose against the paper stack.
End

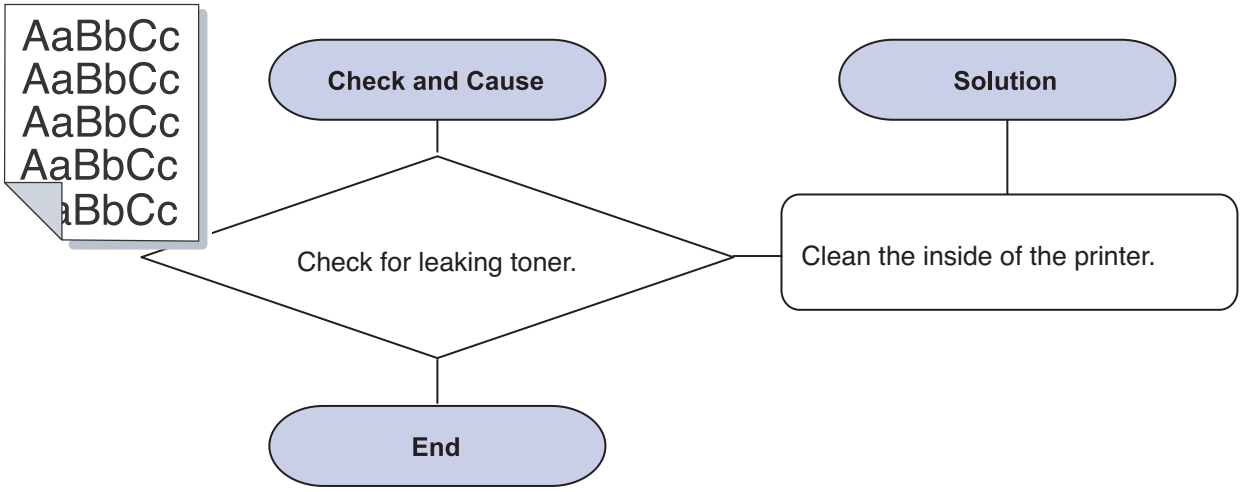
11) Curl or wave


Check and Cause
Solution
1. Curl or wave
Ensure that the paper is loaded properly.
2. Check the paper type and quality.
Both high temperature and high humidity can cause paper curl.
3. Turn the stack of paper over in the tray.
Also try rotating the paper 180° in the tray.
End

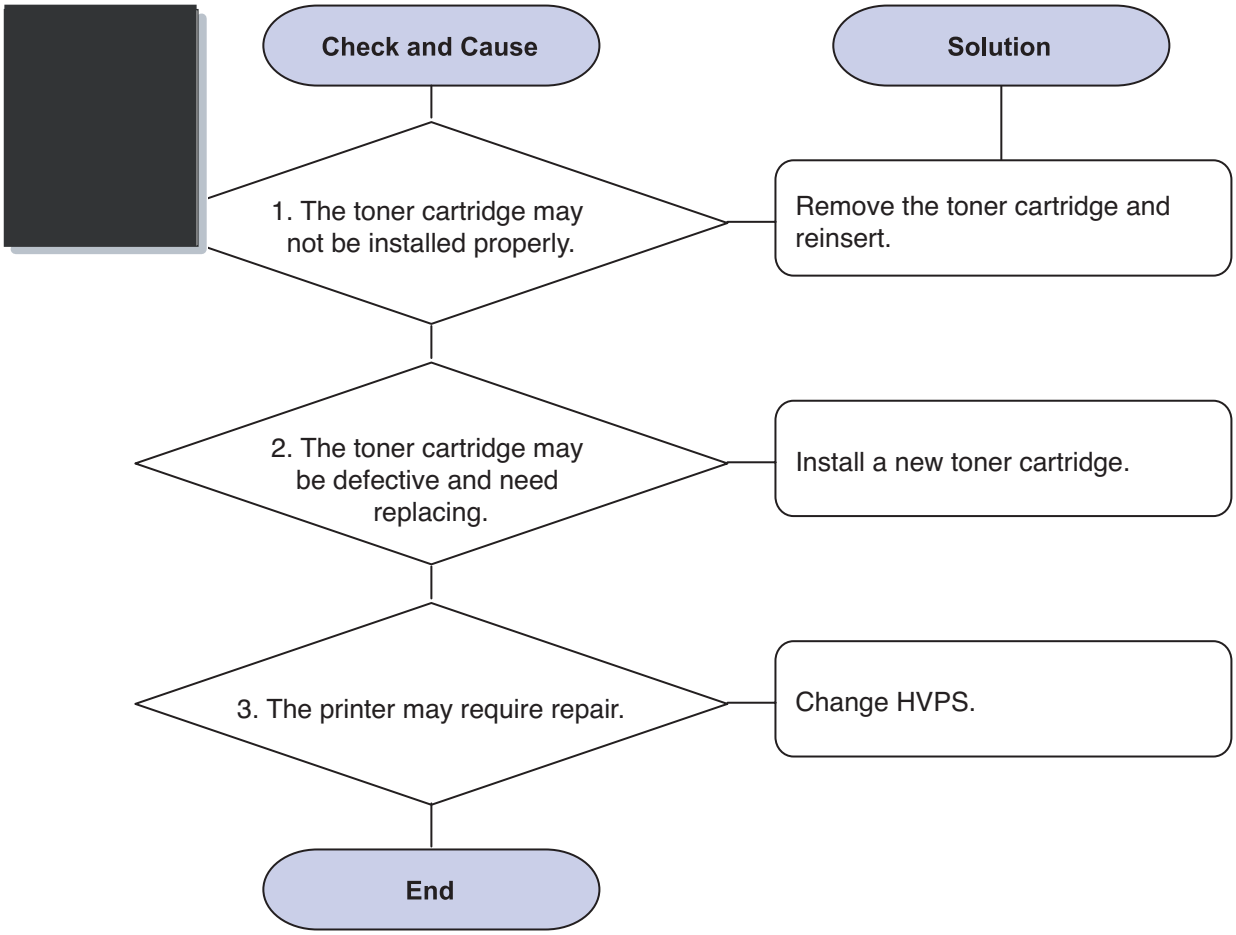
12) Wrinkles or creases



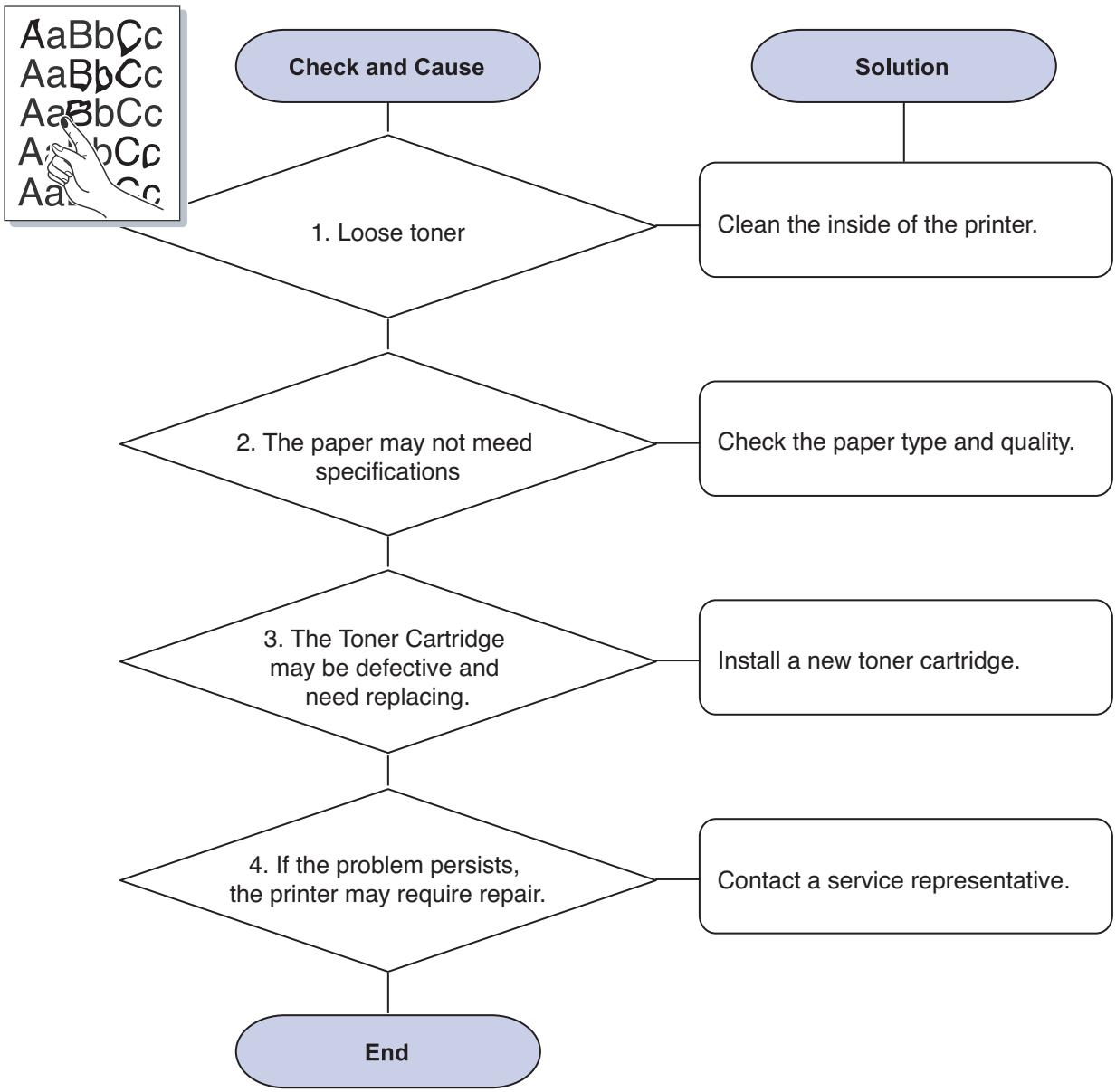
13) Back of printouts aredirty



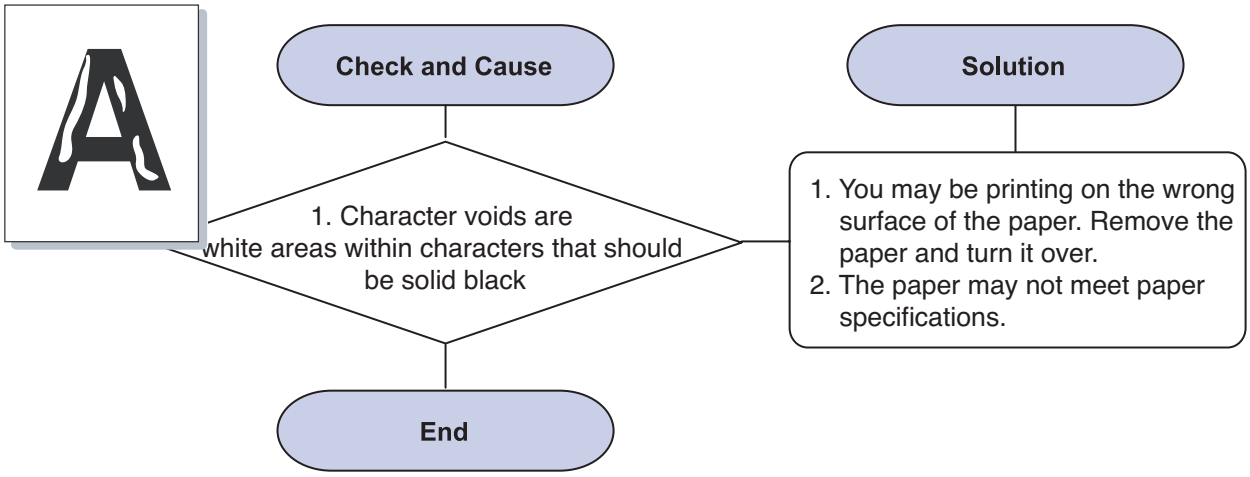
14) Solid Color or Black pages


Check and Cause
Solution
1. The toner cartridge may not be installed properly.
Remove the toner cartridge and reinsert.
2. The toner cartridge may be defective and need replacing.
Install a new toner cartridge.
3. The printer may require repair.
Change HVPS.
End

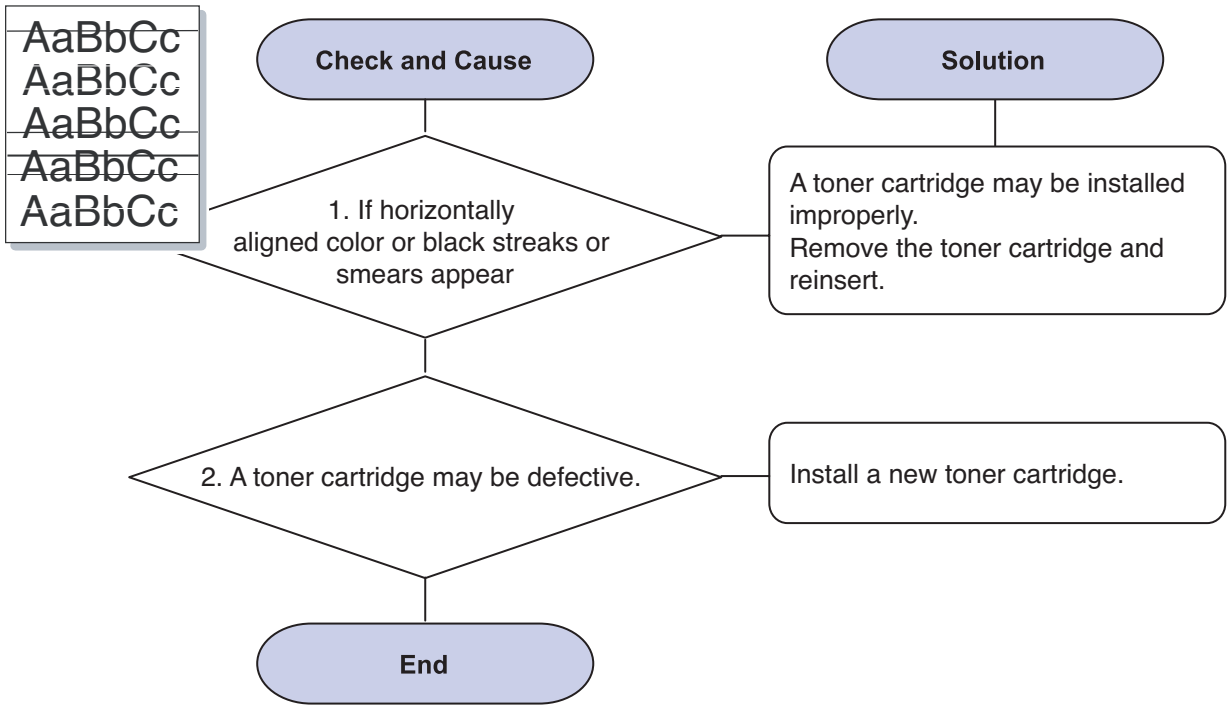
15) Loose toner


AaBbCc
AaBbCc
AaBbCc
Check and Cause
Solution
1. Loose toner
Clean the inside of the printer.
2. The paper may not meed specifications
Check the paper type and quality.
3. The Toner Cartridge may be defective and need replacing.
Install a new toner cartridge.
4. If the problem persists, the printer may require repair.
Contact a service representative.
End

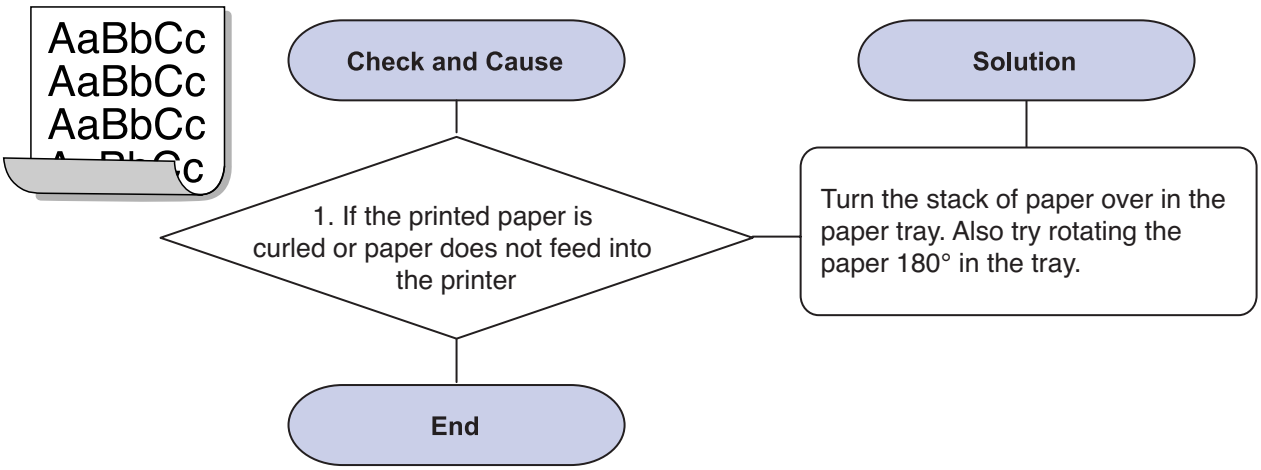
16) Character Voids


Check and Cause
Solution
1. Character voids are white areas within characters that should be solid black
1. You may be printing on the wrong surface of the paper. Remove the paper and turn it over.
2. The paper may not meet paper specifications.
End

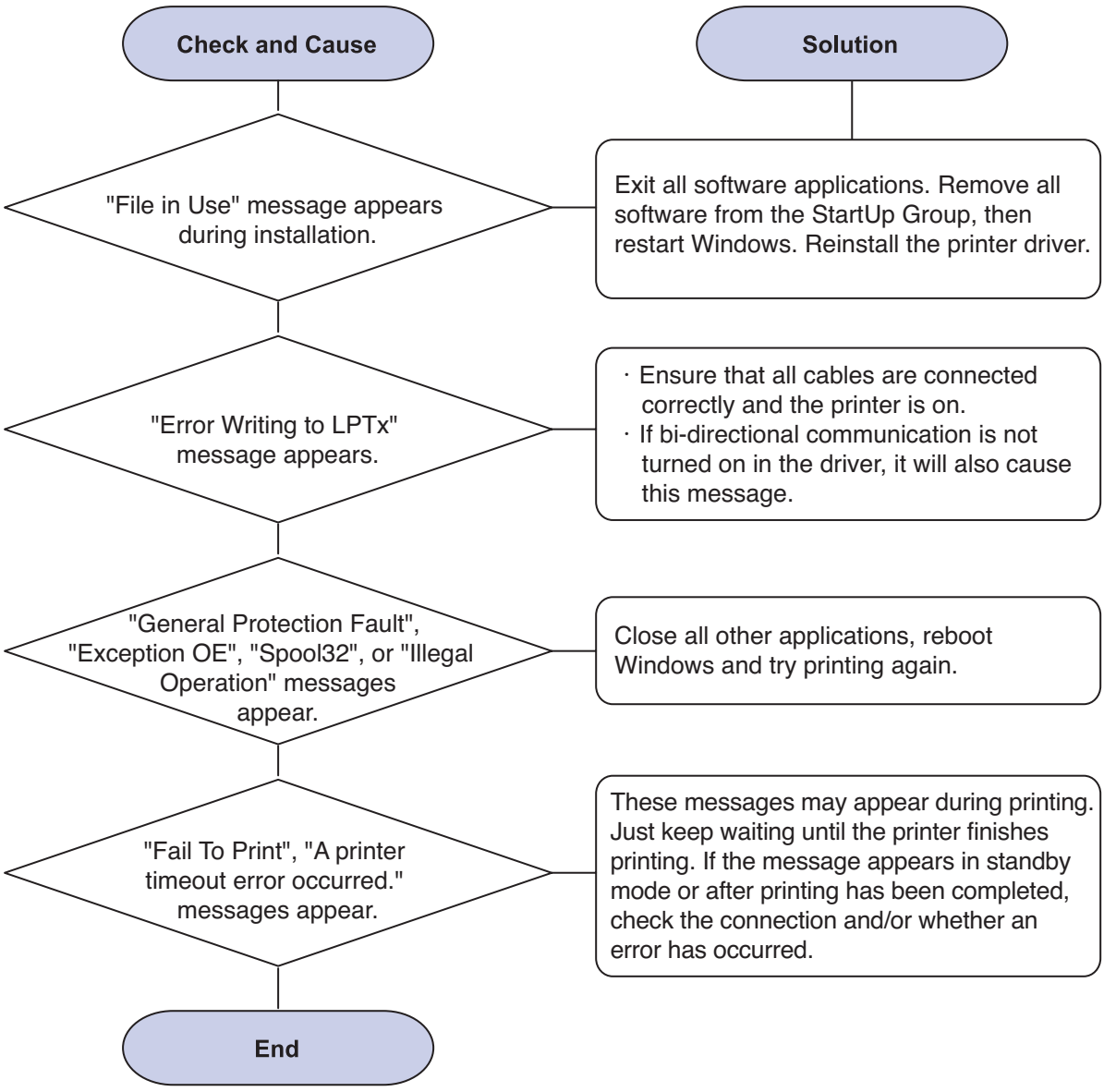
17) Horizontal stripes



18) Curl

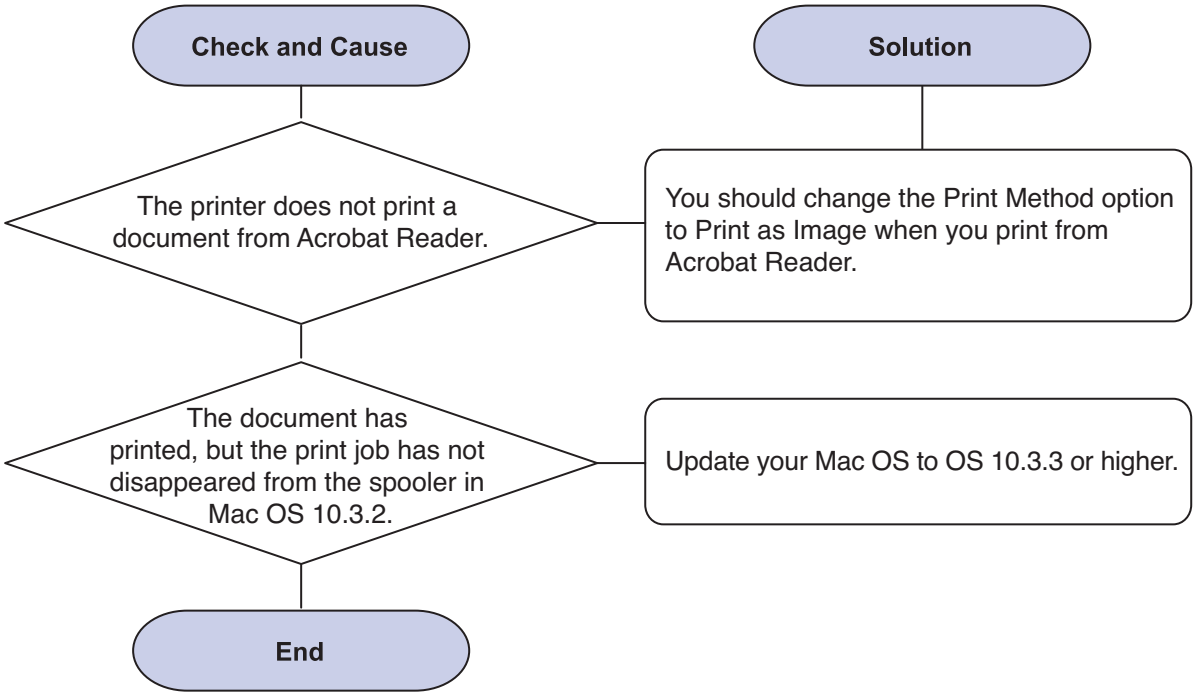

AaBbCc
AaBbCc
AaBbCc
Check and Cause
1. If the printed paper is curled or paper does not feed into the printer
End
Solution
Turn the stack of paper over in the paper tray. Also try rotating the paper 180° in the tray.

4.2.5 Common Windows Problems

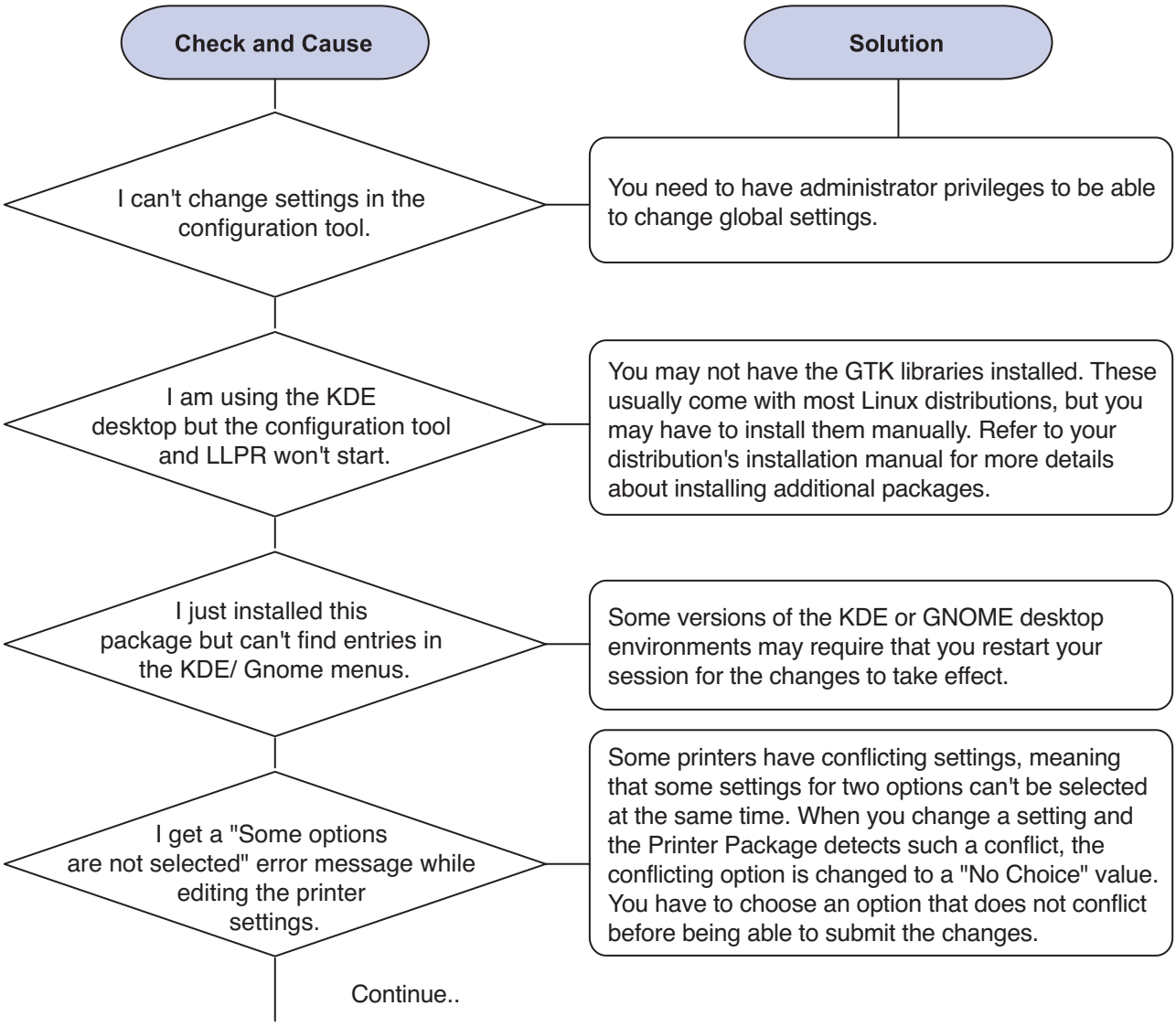

Check and Cause
Solution
"File in Use" message appears during installation.
Exit all software applications. Remove all software from the StartUp Group, then restart Windows. Reinstall the printer driver.
"Error Writing to LPTx" message appears.
· Ensure that all cables are connected correctly and the printer is on.
· If bi-directional communication is not turned on in the driver, it will also cause this message.
"General Protection Fault", "Exception OE", "Spool32", or "Illegal Operation" messages appear.
Close all other applications, reboot Windows and try printing again.
"Fail To Print", "A printer timeout error occurred." messages appear.
These messages may appear during printing. Just keep waiting until the printer finishes printing. If the message appears in standby mode or after printing has been completed, check the connection and/or whether an error has occurred.
End

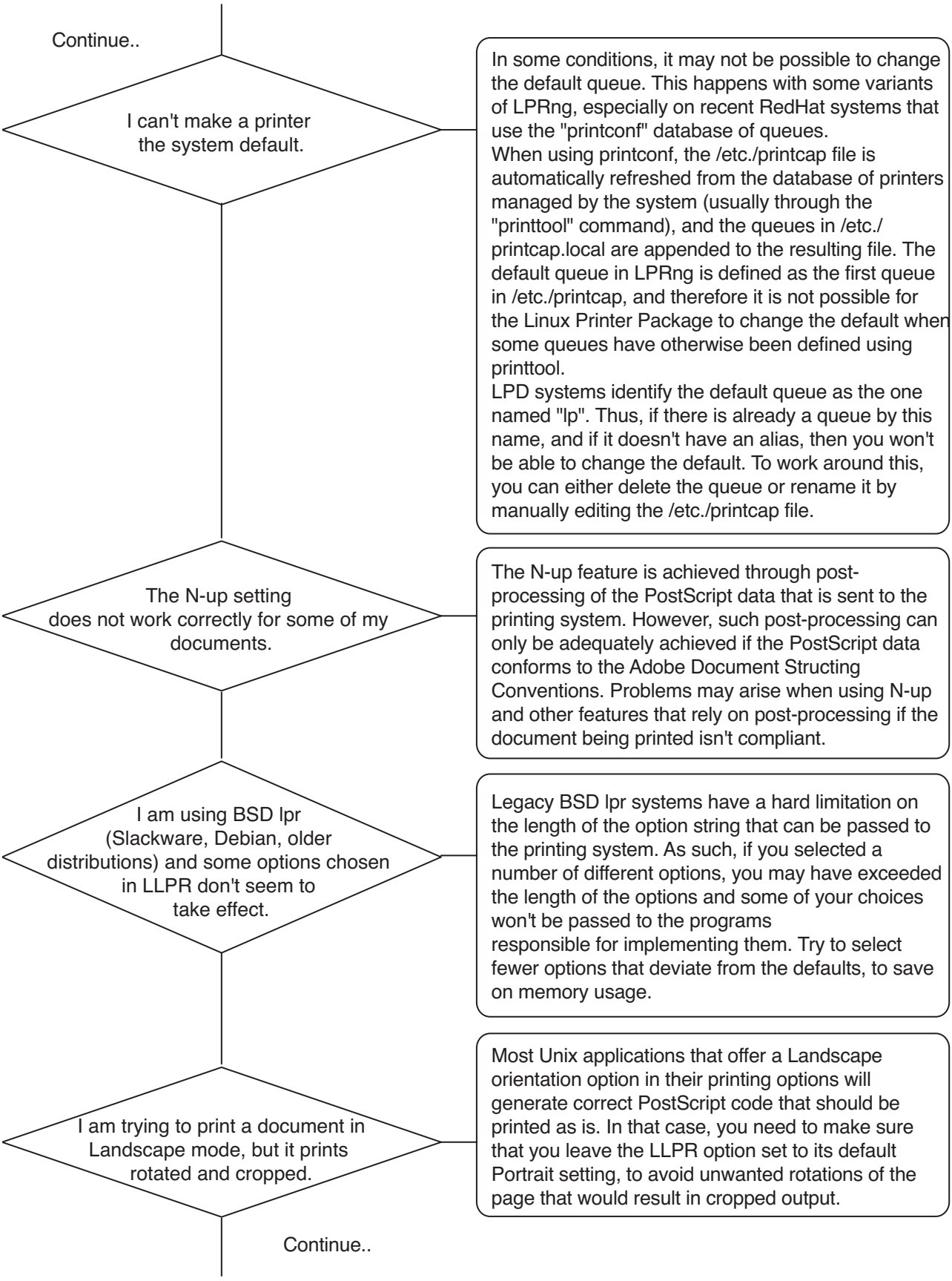
NOTE: Refer to the Microsoft Windows 98/Me/NT 4.0/2000/2003/XP User's Guide that came with your PC for further information on Windows error messages.

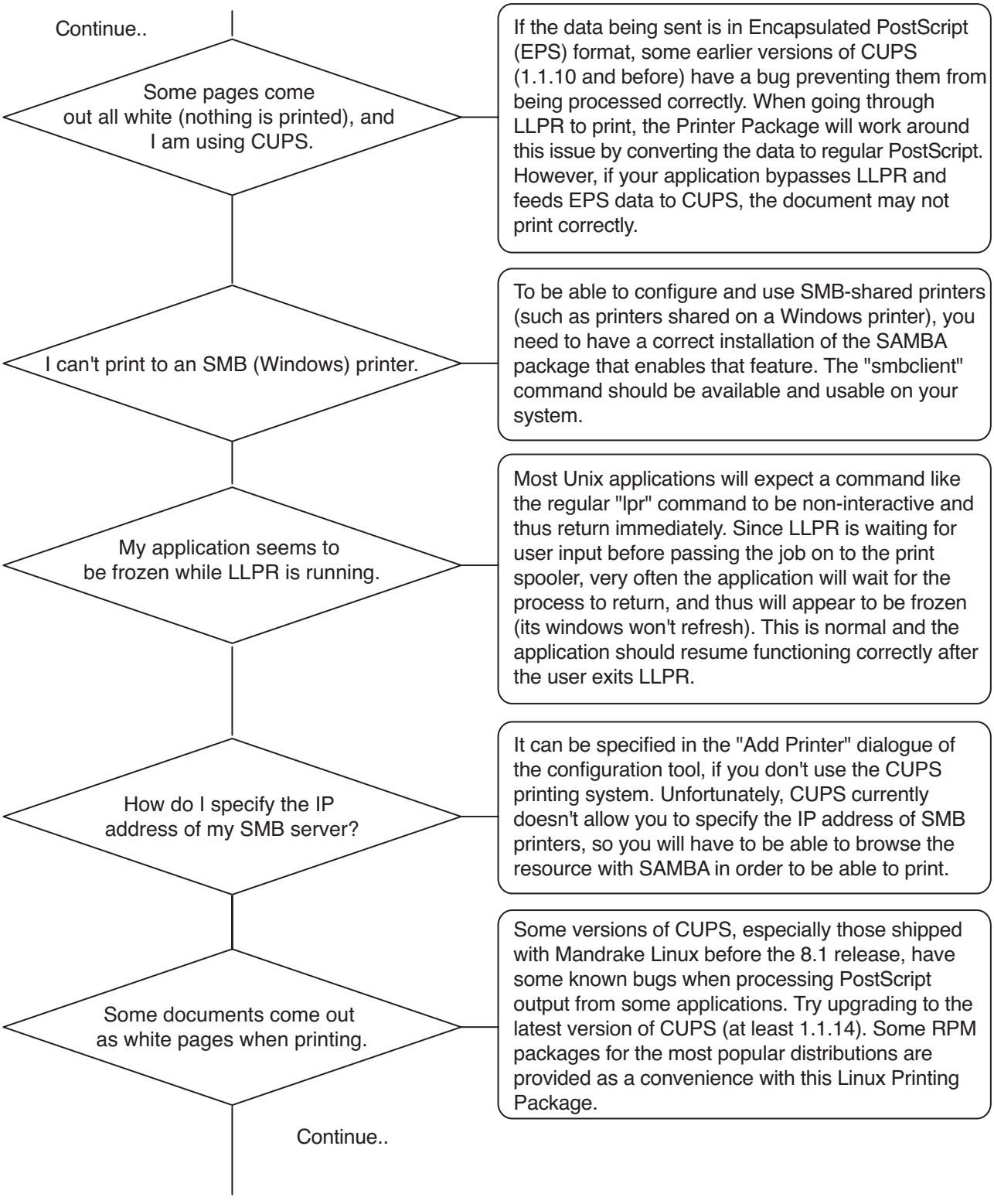
4.2.6 Common Macintosh Problems

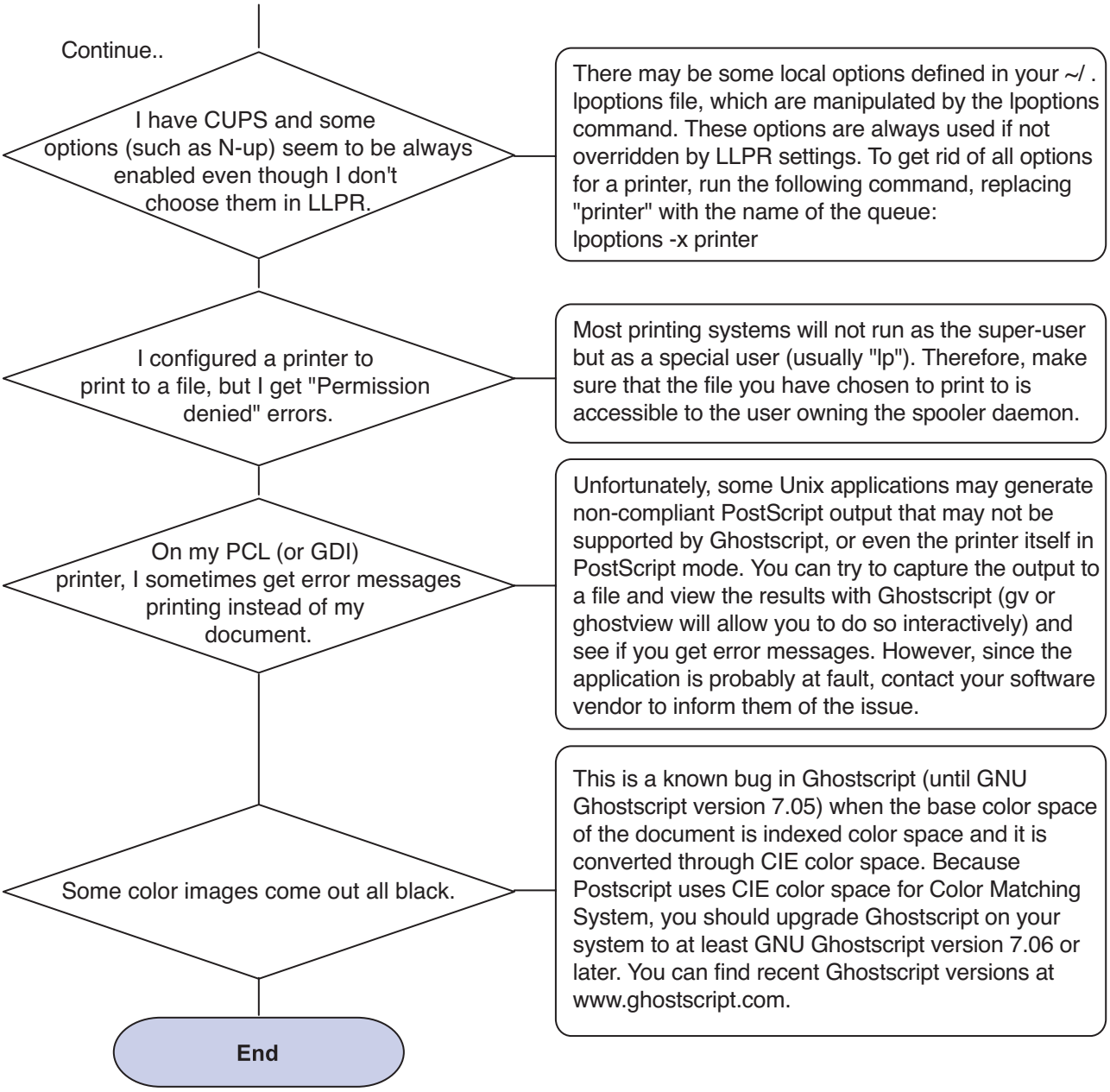

Check and Cause
Solution
The printer does not print a document from Acrobat Reader.
You should change the Print Method option to Print as Image when you print from Acrobat Reader.
The document has printed, but the print job has not disappeared from the spooler in Mac OS 10.3.2.
Update your Mac OS to OS 10.3.3 or higher.
End

4.2.7 Common Linux Problems


Check and Cause
Solution
I can't change settings in the configuration tool.
You need to have administrator privileges to be able to change global settings.
I am using the KDE desktop but the configuration tool and LLPR won't start.
You may not have the GTK libraries installed. These usually come with most Linux distributions, but you may have to install them manually. Refer to your distribution's installation manual for more details about installing additional packages.
I just installed this package but can't find entries in the KDE/ Gnome menus.
Some versions of the KDE or GNOME desktop environments may require that you restart your session for the changes to take effect.
I get a "Some options are not selected" error message while editing the printer settings.
Some printers have conflicting settings, meaning that some settings for two options can't be selected at the same time. When you change a setting and the Printer Package detects such a conflict, the conflicting option is changed to a "No Choice" value. You have to choose an option that does not conflict before being able to submit the changes.
Continue..


Continue..
I can't make a printer the system default.
In some conditions, it may not be possible to change the default queue. This happens with some variants of LPRng, especially on recent RedHat systems that use the "printconf" database of queues.
When using printconf, the /etc./printcap file is automatically refreshed from the database of printers managed by the system (usually through the "printtool" command), and the queues in /etc./printcap.local are appended to the resulting file. The default queue in LPRng is defined as the first queue in /etc./printcap, and therefore it is not possible for the Linux Printer Package to change the default when some queues have otherwise been defined using printtool.
LPD systems identify the default queue as the one named "lp". Thus, if there is already a queue by this name, and if it doesn't have an alias, then you won't be able to change the default. To work around this, you can either delete the queue or rename it by manually editing the /etc./printcap file.
The N-up setting does not work correctly for some of my documents.
The N-up feature is achieved through post-processing of the PostScript data that is sent to the printing system. However, such post-processing can only be adequately achieved if the PostScript data conforms to the Adobe Document Structing Conventions. Problems may arise when using N-up and other features that rely on post-processing if the document being printed isn't compliant.
I am using BSD lpr (Slackware, Debian, older distributions) and some options chosen in LLPR don't seem to take effect.
Legacy BSD lpr systems have a hard limitation on the length of the option string that can be passed to the printing system. As such, if you selected a number of different options, you may have exceeded the length of the options and some of your choices won't be passed to the programs responsible for implementing them. Try to select fewer options that deviate from the defaults, to save on memory usage.
I am trying to print a document in Landscape mode, but it prints rotated and cropped.
Most Unix applications that offer a Landscape orientation option in their printing options will generate correct PostScript code that should be printed as is. In that case, you need to make sure that you leave the LLPR option set to its default Portrait setting, to avoid unwanted rotations of the page that would result in cropped output.
Continue..

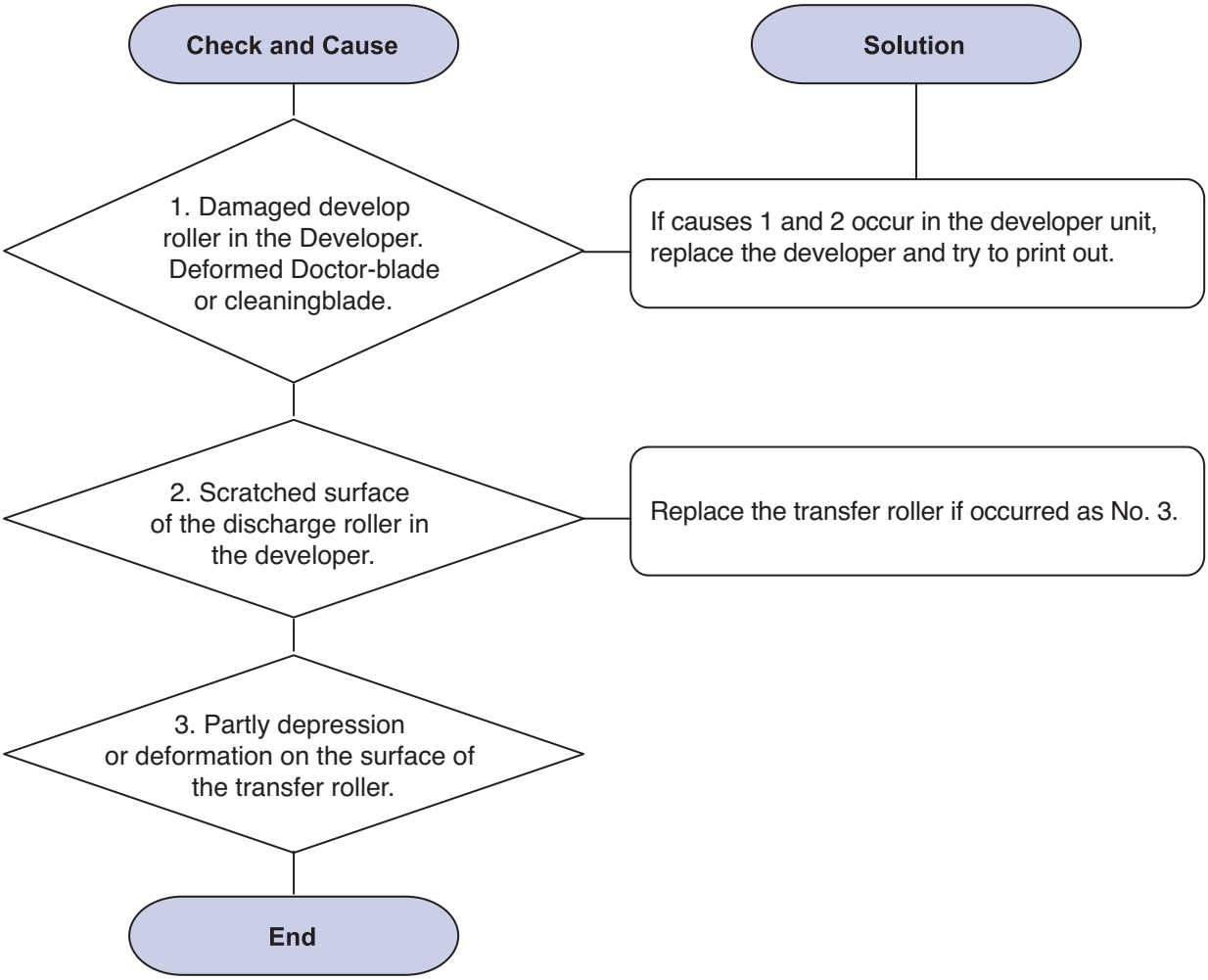

Continue..
Some pages come out all white (nothing is printed), and I am using CUPS.
If the data being sent is in Encapsulated PostScript (EPS) format, some earlier versions of CUPS (1.1.10 and before) have a bug preventing them from being processed correctly. When going through LLPR to print, the Printer Package will work around this issue by converting the data to regular PostScript. However, if your application bypasses LLPR and feeds EPS data to CUPS, the document may not print correctly.
I can't print to an SMB (Windows) printer.
To be able to configure and use SMB-shared printers (such as printers shared on a Windows printer), you need to have a correct installation of the SAMBA package that enables that feature. The "smbclient" command should be available and usable on your system.
My application seems to be frozen while LLPR is running.
Most Unix applications will expect a command like the regular "lpr" command to be non-interactive and thus return immediately. Since LLPR is waiting for user input before passing the job on to the print spooler, very often the application will wait for the process to return, and thus will appear to be frozen (its windows won't refresh). This is normal and the application should resume functioning correctly after the user exits LLPR.
How do I specify the IP address of my SMB server?
It can be specified in the "Add Printer" dialogue of the configuration tool, if you don't use the CUPS printing system. Unfortunately, CUPS currently doesn't allow you to specify the IP address of SMB printers, so you will have to be able to browse the resource with SAMBA in order to be able to print.
Some documents come out as white pages when printing.
Some versions of CUPS, especially those shipped with Mandrake Linux before the 8.1 release, have some known bugs when processing PostScript output from some applications. Try upgrading to the latest version of CUPS (at least 1.1.14). Some RPM packages for the most popular distributions are provided as a convenience with this Linux Printing Package.
Continue..


Continue..
I have CUPS and some options (such as N-up) seem to be always enabled even though I don't choose them in LLPR.
There may be some local options defined in your ~/ . lpoptions file, which are manipulated by the lpoptions command. These options are always used if not overridden by LLPR settings. To get rid of all options for a printer, run the following command, replacing "printer" with the name of the queue:
lpoptions -x printer
I configured a printer to print to a file, but I get "Permission denied" errors.
Most printing systems will not run as the super-user but as a special user (usually "lp"). Therefore, make sure that the file you have chosen to print to is accessible to the user owning the spooler daemon.
On my PCL (or GDI) printer, I sometimes get error messages printing instead of my document.
Unfortunately, some Unix applications may generate non-compliant PostScript output that may not be supported by Ghostscript, or even the printer itself in PostScript mode. You can try to capture the output to a file and view the results with Ghostscript (gv or ghostview will allow you to do so interactively) and see if you get error messages. However, since the application is probably at fault, contact your software vendor to inform them of the issue.
Some color images come out all black.
This is a known bug in Ghostscript (until GNU Ghostscript version 7.05) when the base color space of the document is indexed color space and it is converted through CIE color space. Because Postscript uses CIE color space for Color Matching System, you should upgrade Ghostscript on your system to at least GNU Ghostscript version 7.06 or later. You can find recent Ghostscript versions at www.ghostscript.com.
End

4.2.8 Major Problems Trouble shooting

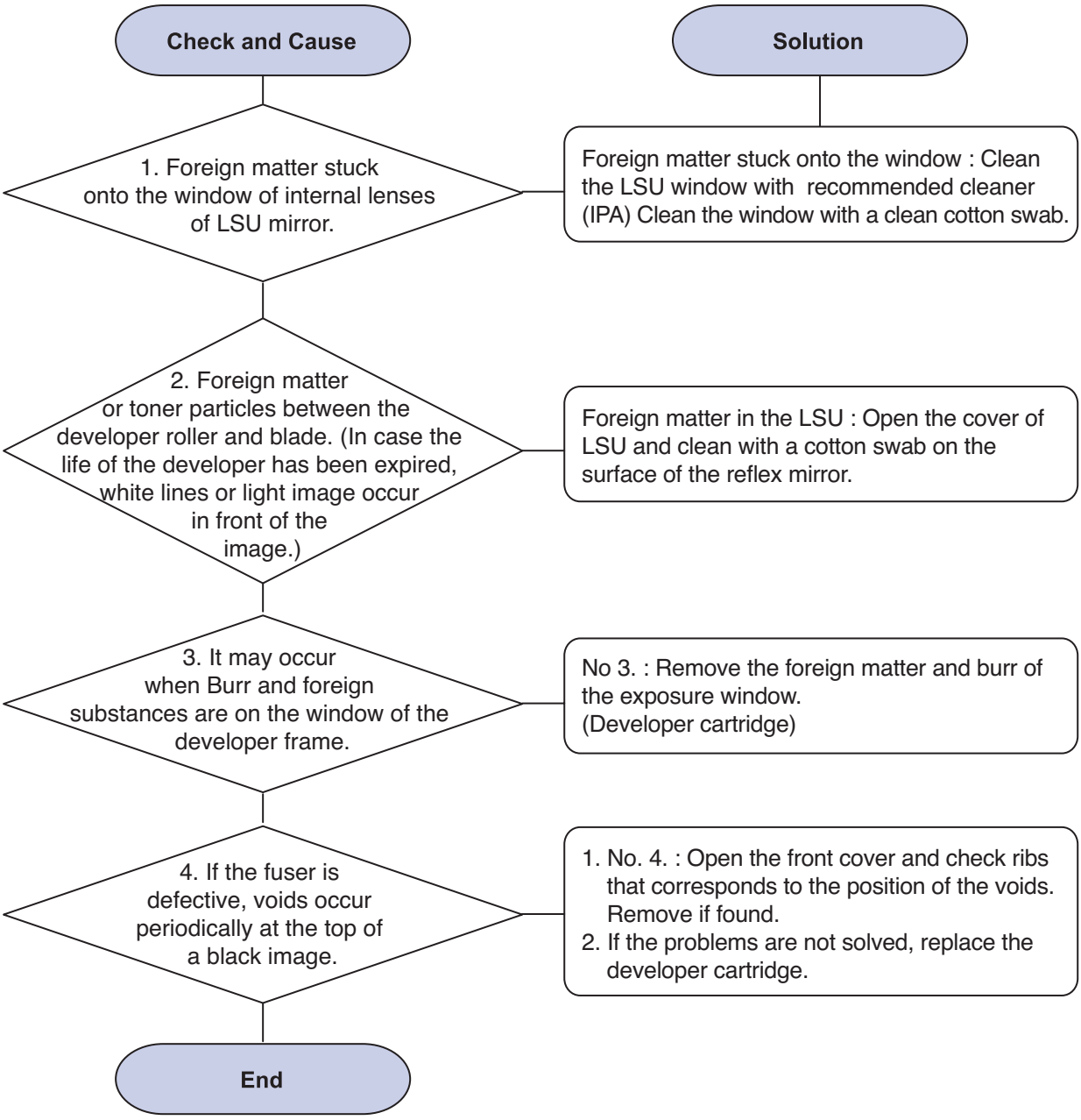
1) Vertical Line and Band

• **Description**
1. Straight thin black vertical line occurs in the printing.
2. Dark black vertical band occur in the printing.


Check and Cause
Solution
1. Damaged develop roller in the Developer. Deformed Doctor-blade or cleaningblade.
If causes 1 and 2 occur in the developer unit, replace the developer and try to print out.
2. Scratched surface of the discharge roller in the developer.
Replace the transfer roller if occurred as No. 3.
3. Partly depression or deformation on the surface of the transfer roller.
End

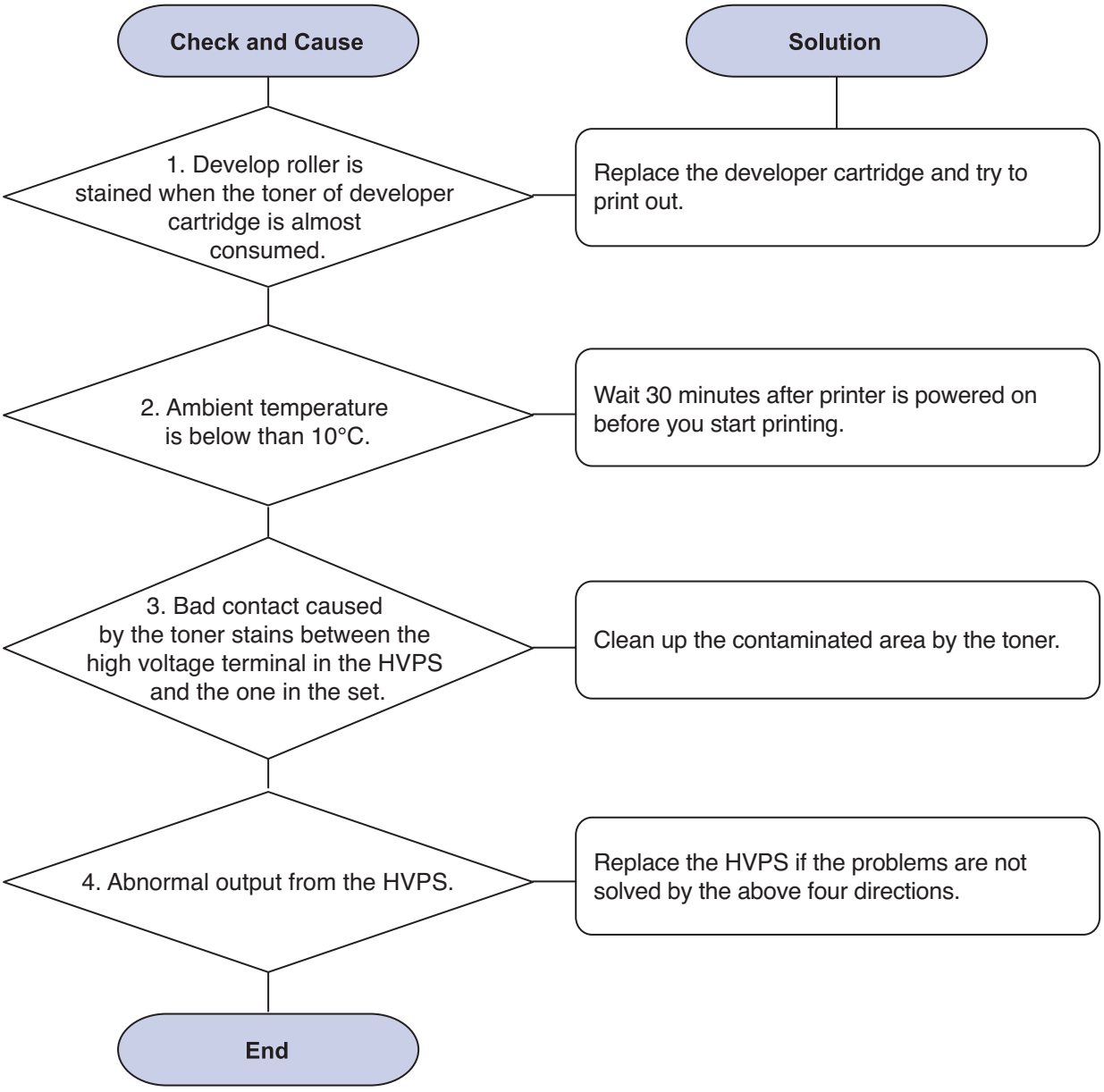
2) Vertical White Line

• **Description** White vertical voids in the image.


Check and Cause
Solution
1. Foreign matter stuck onto the window of internal lenses of LSU mirror.
Foreign matter stuck onto the window : Clean the LSU window with recommended cleaner (IPA) Clean the window with a clean cotton swab.
2. Foreign matter or toner particles between the developer roller and blade. (In case the life of the developer has been expired, white lines or light image occur in front of the image.)
Foreign matter in the LSU : Open the cover of LSU and clean with a cotton swab on the surface of the reflex mirror.
3. It may occur when Burr and foreign substances are on the window of the developer frame.
No 3. : Remove the foreign matter and burr of the exposure window. (Developer cartridge)
4. If the fuser is defective, voids occur periodically at the top of a black image.
1. No. 4. : Open the front cover and check ribs that corresponds to the position of the voids. Remove if found.
2. If the problems are not solved, replace the developer cartridge.
End

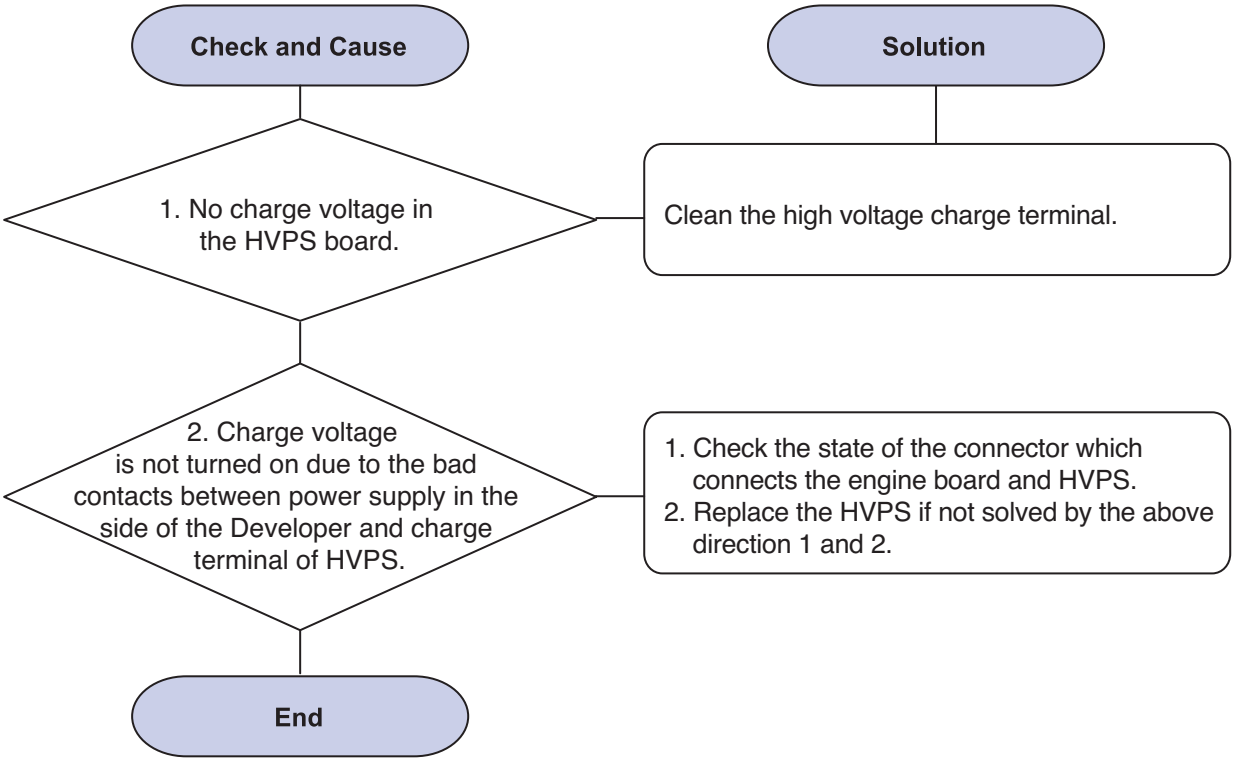
3) Light Image

• **Description** The printed image is light, with no ghost.


Check and Cause
Solution
1. Develop roller is stained when the toner of developer cartridge is almost consumed.
Replace the developer cartridge and try to print out.
2. Ambient temperature is below than 10°C.
Wait 30 minutes after printer is powered on before you start printing.
3. Bad contact caused by the toner stains between the high voltage terminal in the HVPS and the one in the set.
Clean up the contaminated area by the toner.
4. Abnormal output from the HVPS.
Replace the HVPS if the problems are not solved by the above four directions.
End

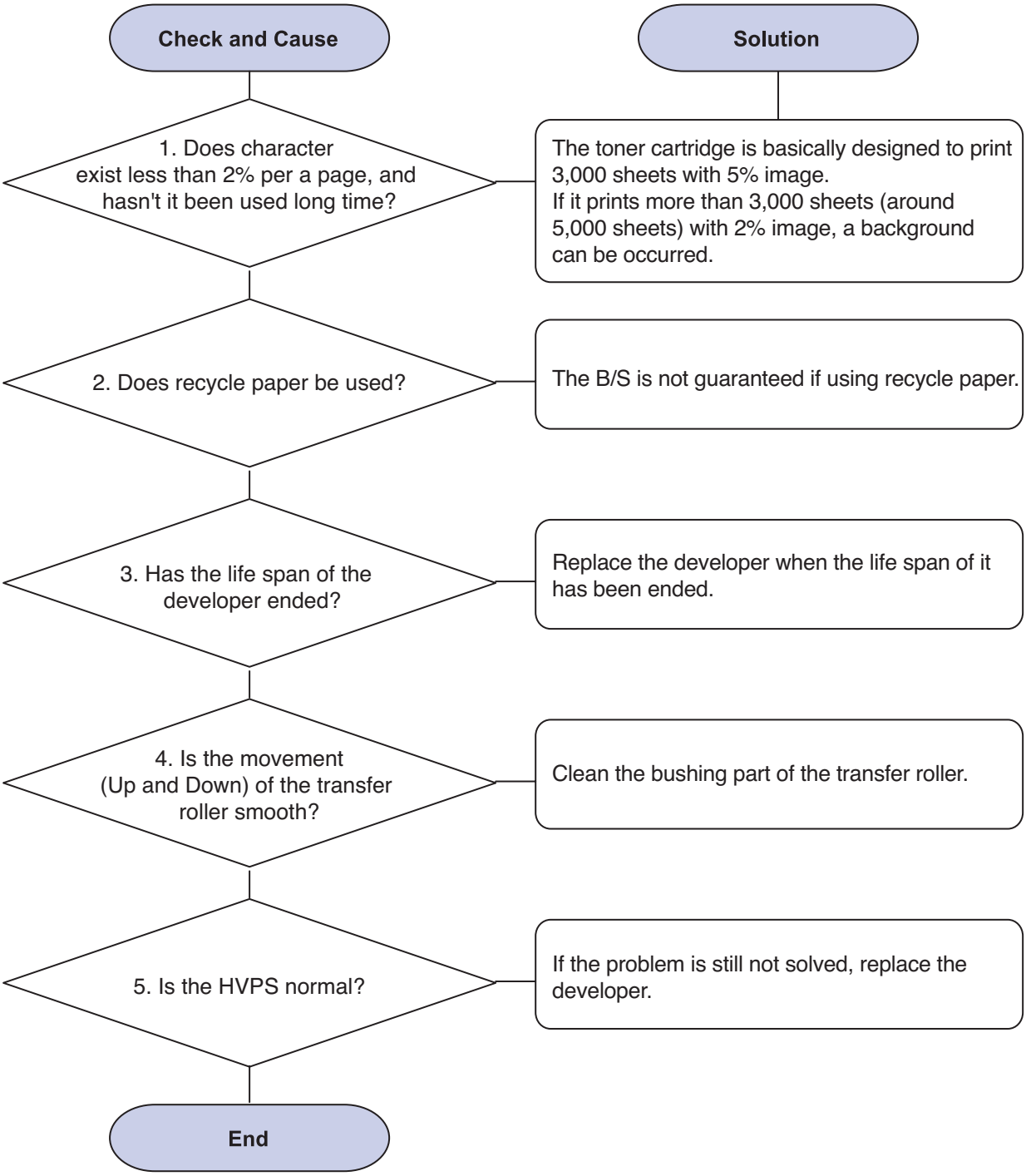
4) Dark Image or black

• **Description** The printed image is dark.


Check and Cause
Solution
1. No charge voltage in the HVPS board.
Clean the high voltage charge terminal.
2. Charge voltage is not turned on due to the bad contacts between power supply in the side of the Developer and charge terminal of HVPS.
1. Check the state of the connector which connects the engine board and HVPS.
2. Replace the HVPS if not solved by the above direction 1 and 2.
End

5) Background

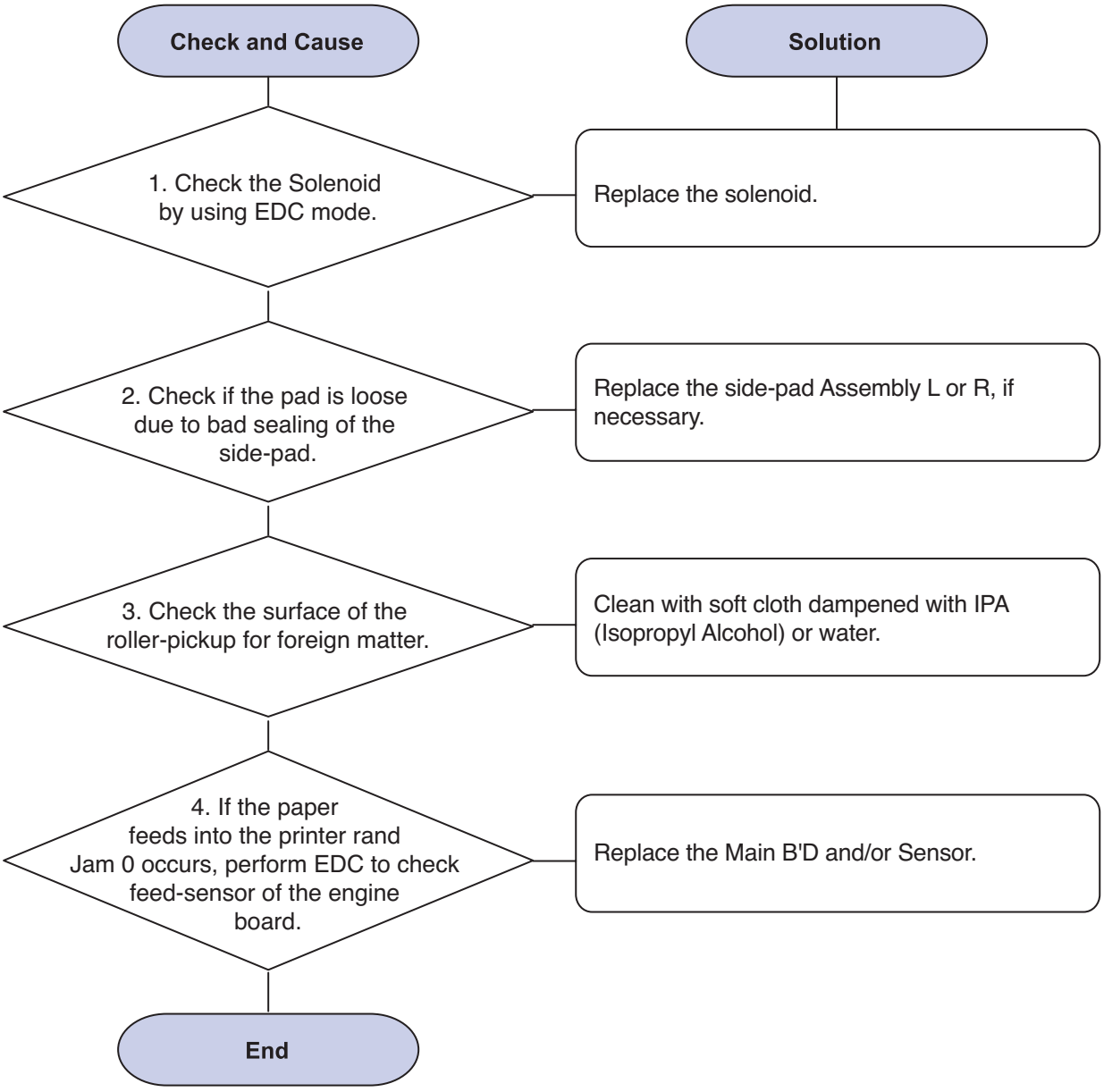
• **Description** Light dark background appears in whole area of the printing.


Check and Cause
Solution
1. Does character exist less than 2% per a page, and hasn't it been used long time?
The toner cartridge is basically designed to print 3,000 sheets with 5% image. If it prints more than 3,000 sheets (around 5,000 sheets) with 2% image, a background can be occurred.
2. Does recycle paper be used?
The B/S is not guaranteed if using recycle paper.
3. Has the life span of the developer ended?
Replace the developer when the life span of it has been ended.
4. Is the movement (Up and Down) of the transfer roller smooth?
Clean the bushing part of the transfer roller.
5. Is the HVPS normal?
If the problem is still not solved, replace the developer.
End

6) JAM 0

• **Description**

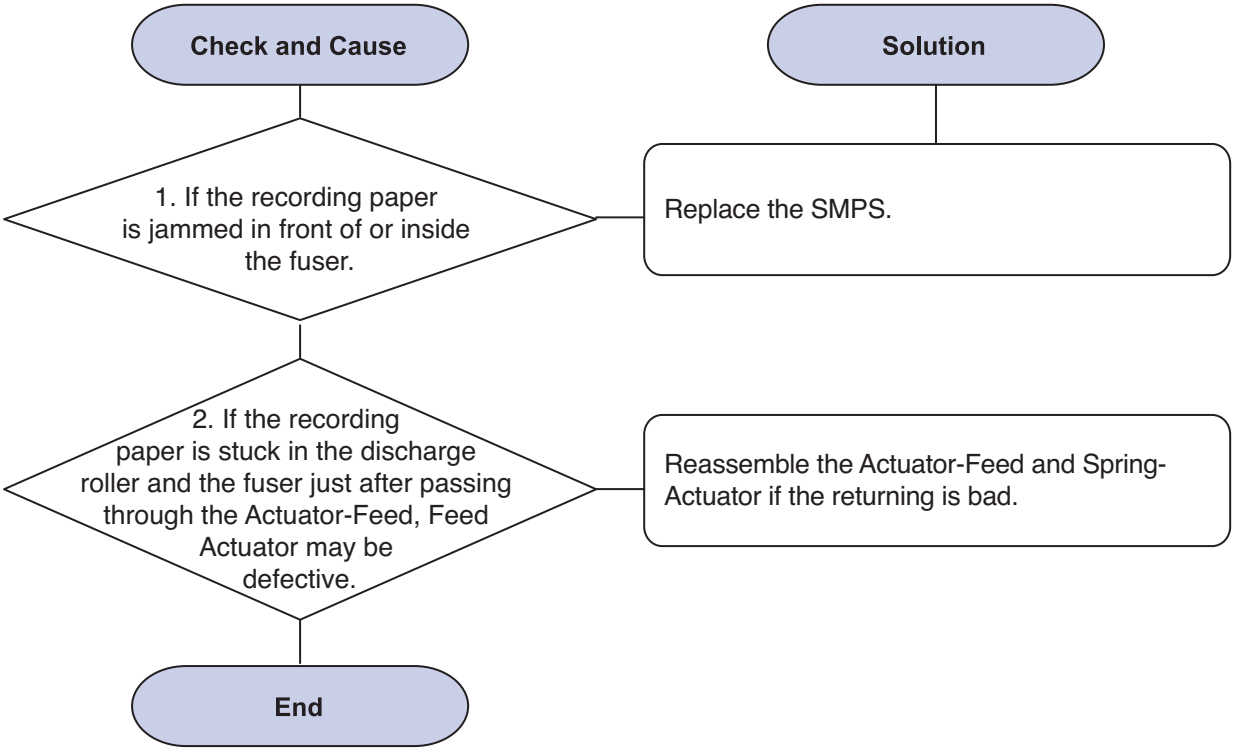
1. Paper is not exited from the cassette.
2. Jam-0 occurs if the paper feeds into the printer.


Check and Cause
Solution
1. Check the Solenoid by using EDC mode.
Replace the solenoid.
2. Check if the pad is loose due to bad sealing of the side-pad.
Replace the side-pad Assembly L or R, if necessary.
3. Check the surface of the roller-pickup for foreign matter.
Clean with soft cloth dampened with IPA (Isopropyl Alcohol) or water.
4. If the paper feeds into the printer rand Jam 0 occurs, perform EDC to check feed-sensor of the engine board.
Replace the Main B'D and/or Sensor.
End

7 JAM 1

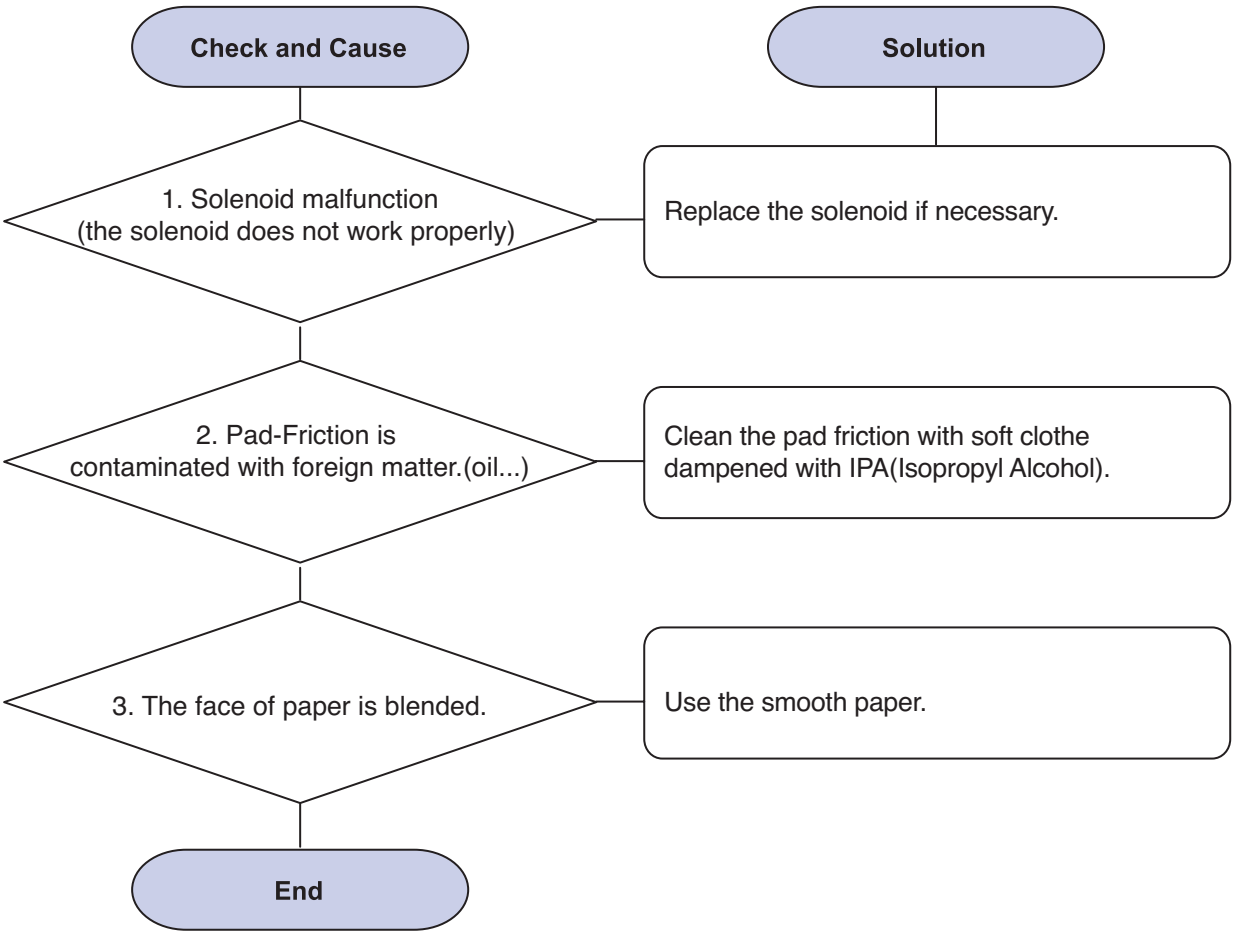
• Description

1. Recording paper is jammed in front of or inside the fuser.
2. Recording paper is stuck in the discharge roller and in the fuser just after passing through the Actuator-Feed.


Check and Cause
Solution
1. If the recording paper is jammed in front of or inside the fuser.
Replace the SMPS.
2. If the recording paper is stuck in the discharge roller and the fuser just after passing through the Actuator-Feed, Feed Actuator may be defective.
Reassemble the Actuator-Feed and Spring-Actuator if the returning is bad.
End

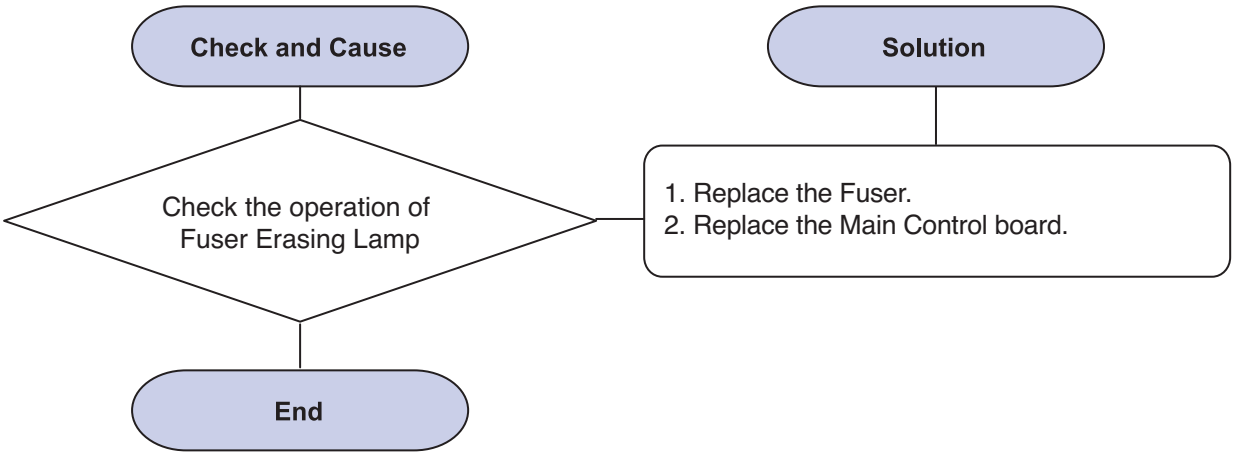
8) Multi-Feeding

• **Description** Multiple sheets of paper are fed at once.


Check and Cause
Solution
1. Solenoid malfunction
(the solenoid does not work properly)
Replace the solenoid if necessary.
2. Pad-Friction is
contaminated with foreign matter.(oil...)
Clean the pad friction with soft clothe
dampened with IPA(Isopropyl Alcohol).
3. The face of paper is blended.
Use the smooth paper.
End

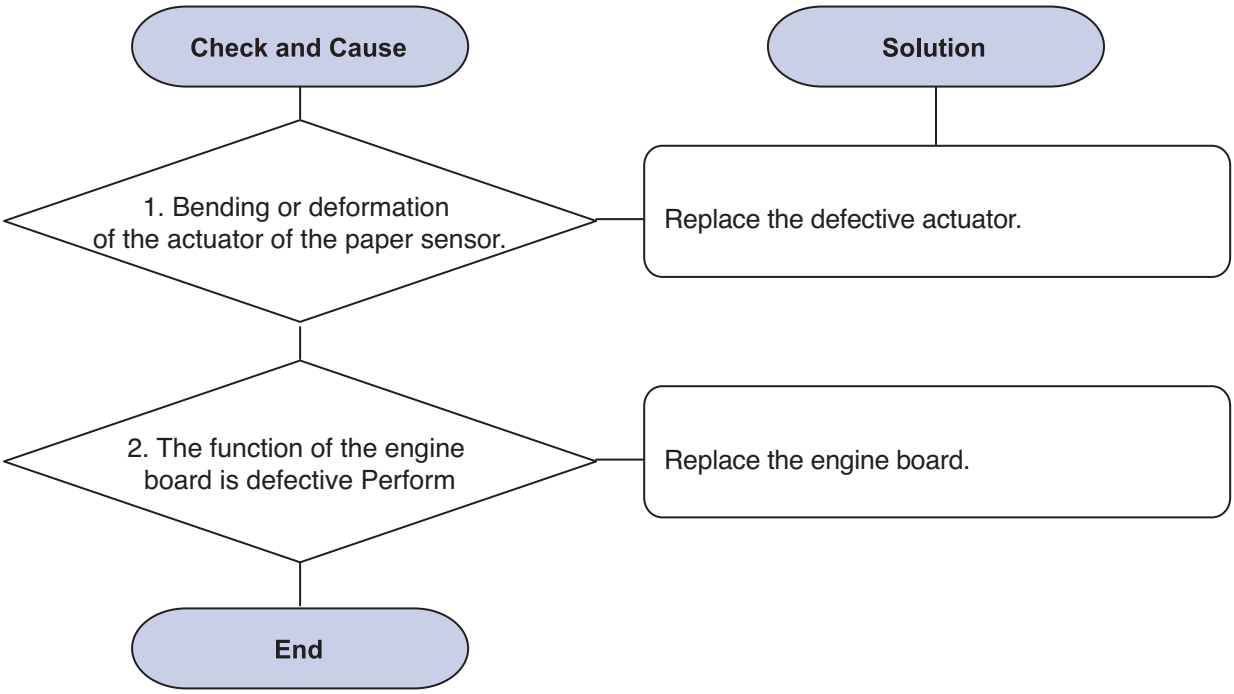
9) Not function of the gear of the fuser due to melting away

• **Description** The motor breaks away from its place due to gear melting away.



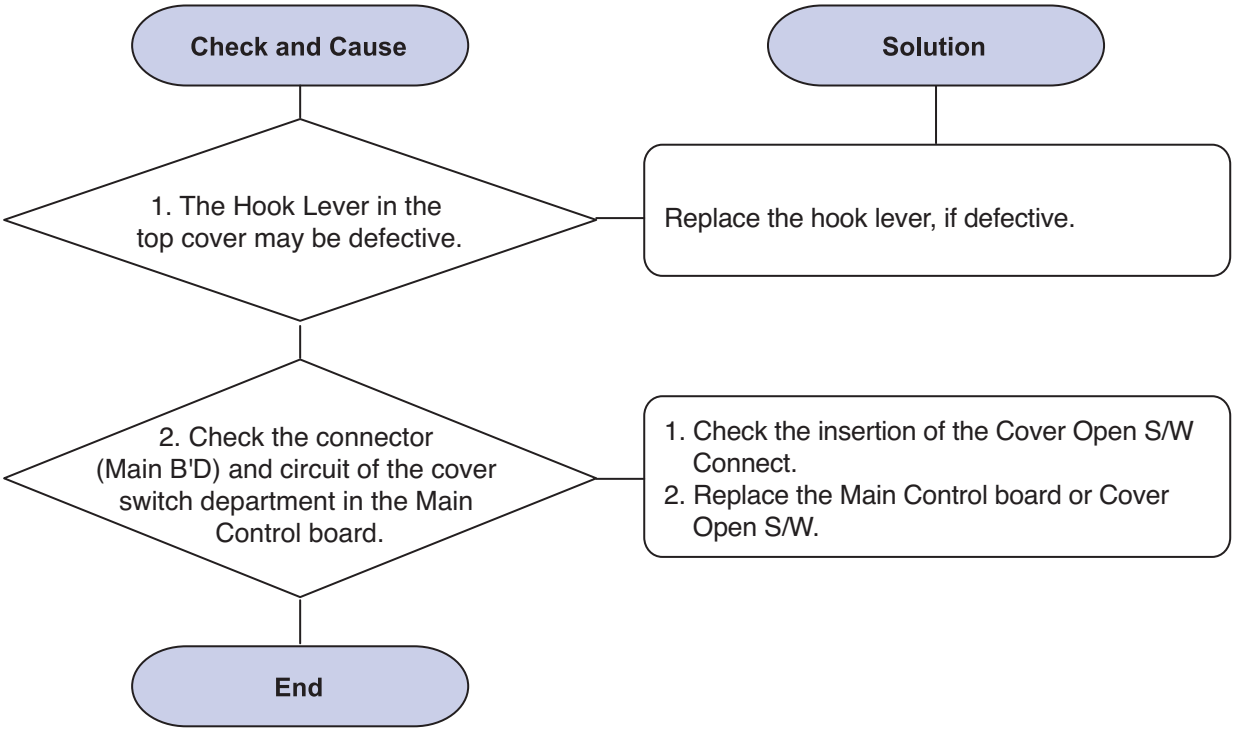
10) Paper Empty

• **Description** The paper lamp on the operator panel is on even when paper is loaded in the cassette.


Check and Cause
Solution
1. Bending or deformation of the actuator of the paper sensor.
Replace the defective actuator.
2. The function of the engine board is defective Perform
Replace the engine board.
End

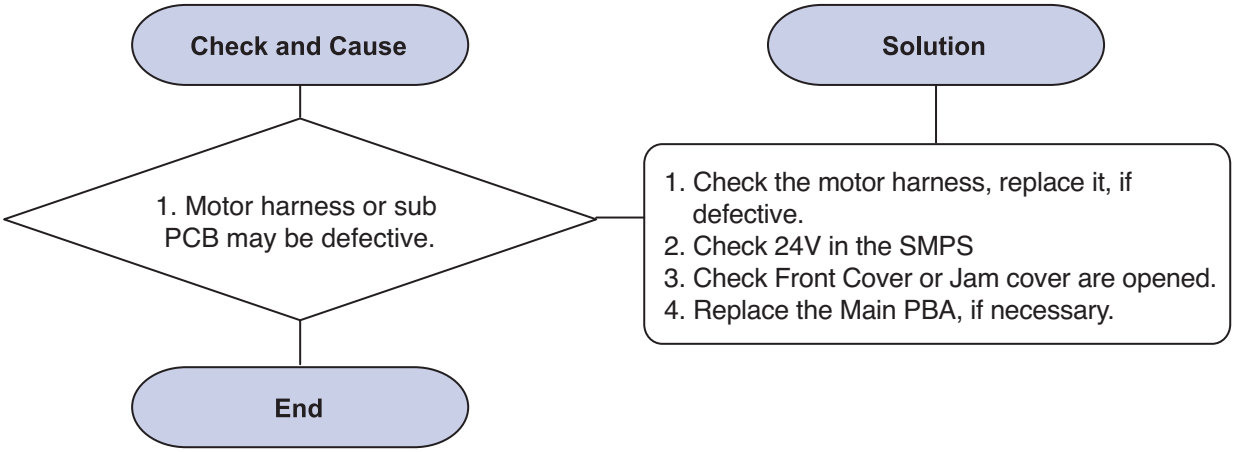
11) Cover Open

• **Description** The ERROR lamp is on even when the print cover is closed.


Check and Cause
Solution
1. The Hook Lever in the top cover may be defective.
Replace the hook lever, if defective.
2. Check the connector (Main B'D) and circuit of the cover switch department in the Main Control board.
1. Check the insertion of the Cover Open S/W Connect.
2. Replace the Main Control board or Cover Open S/W.
End

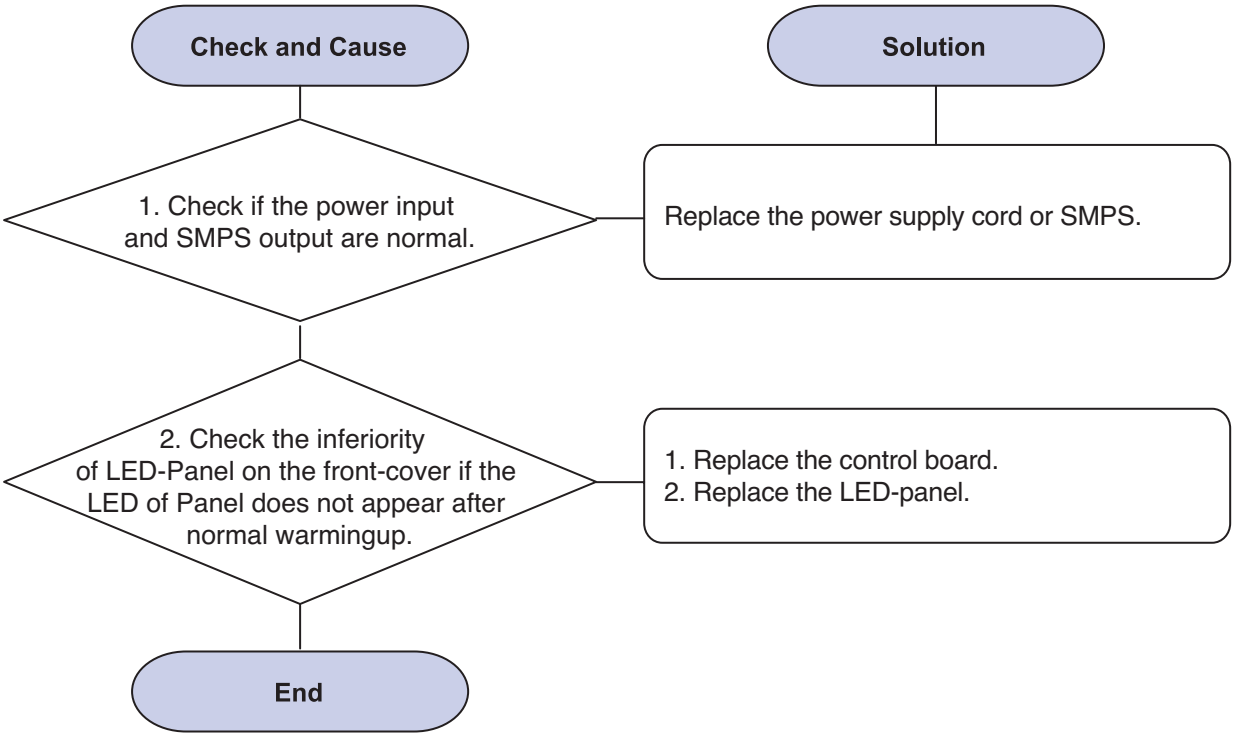
12) Defective motor operation

• **Description** Main motor is not driving when printing, and paper does not feed into the printer, resulting 'Jam 0'.


Check and Cause
Solution
1. Motor harness or sub PCB may be defective.
1. Check the motor harness, replace it, if defective.
2. Check 24V in the SMPS
3. Check Front Cover or Jam cover are opened.
4. Replace the Main PBA, if necessary.
End

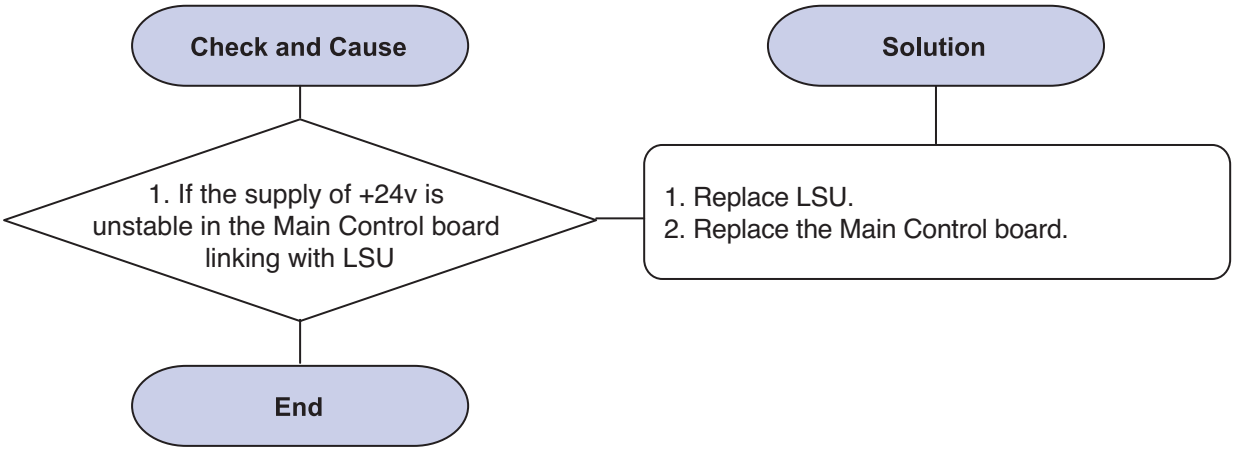
13) No Power

• **Description** When system power is turned on, all lamps on the operator panel do not come on.


Check and Cause
Solution
1. Check if the power input and SMPS output are normal.
Replace the power supply cord or SMPS.
2. Check the inferiority of LED-Panel on the front-cover if the LED of Panel does not appear after normal warmingup.
1. Replace the control board.
2. Replace the LED-panel.
End

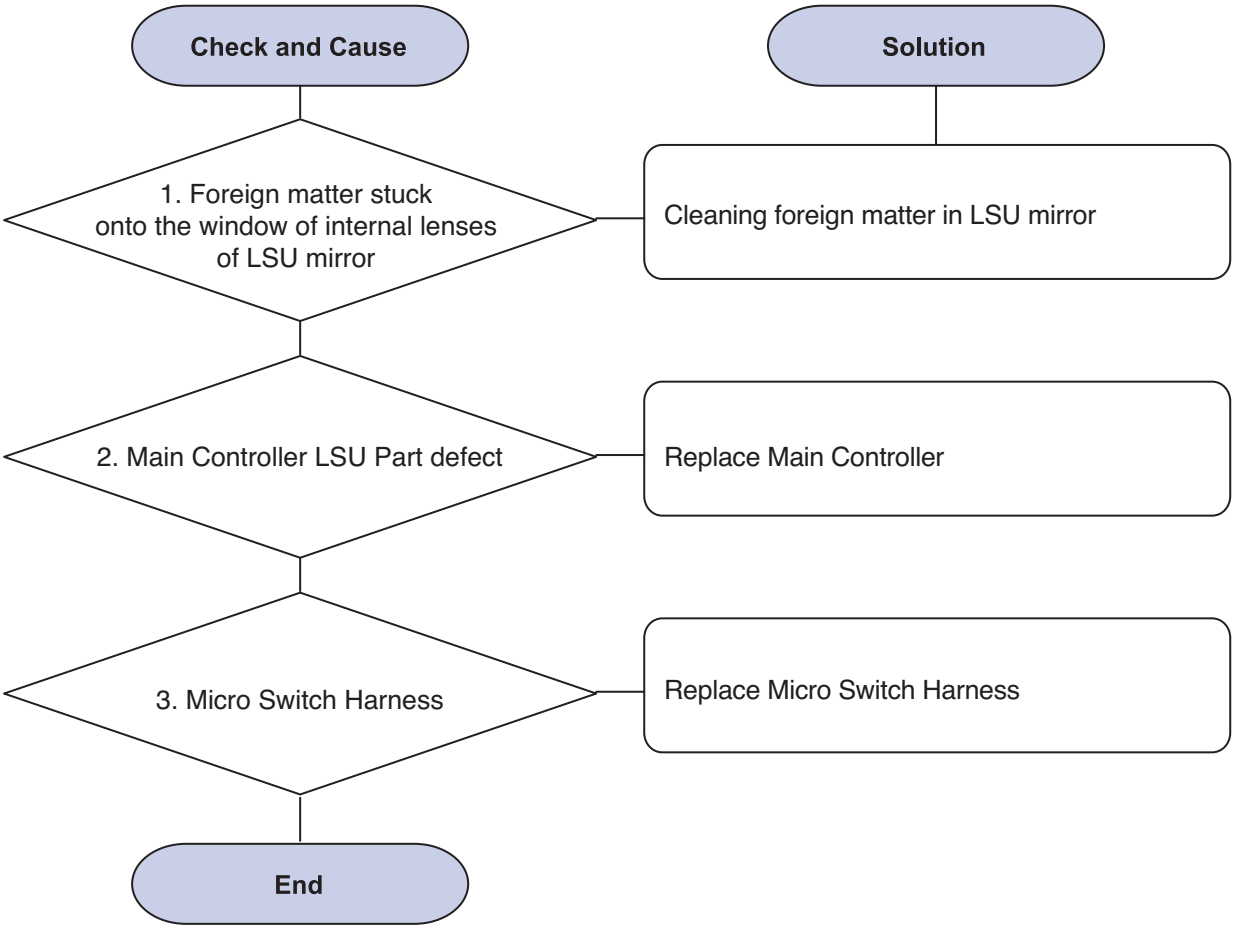
14) Vertical Line Getting Curved

• **Description** When printing, vertical line gets curved.


Check and Cause
Solution
1. If the supply of +24v is unstable in the Main Control board linking with LSU
1. Replace LSU.
2. Replace the Main Control board.
End

15) LSU Error

• **Description** The printing is stop in the fad status, With LSU Error SM Message


Check and Cause
Solution
1. Foreign matter stuck onto the window of internal lenses of LSU mirror
Cleaning foreign matter in LSU mirror
2. Main Controller LSU Part defect
Replace Main Controller
3. Micro Switch Harness
Replace Micro Switch Harness
End

5. Exploded Views and Parts List

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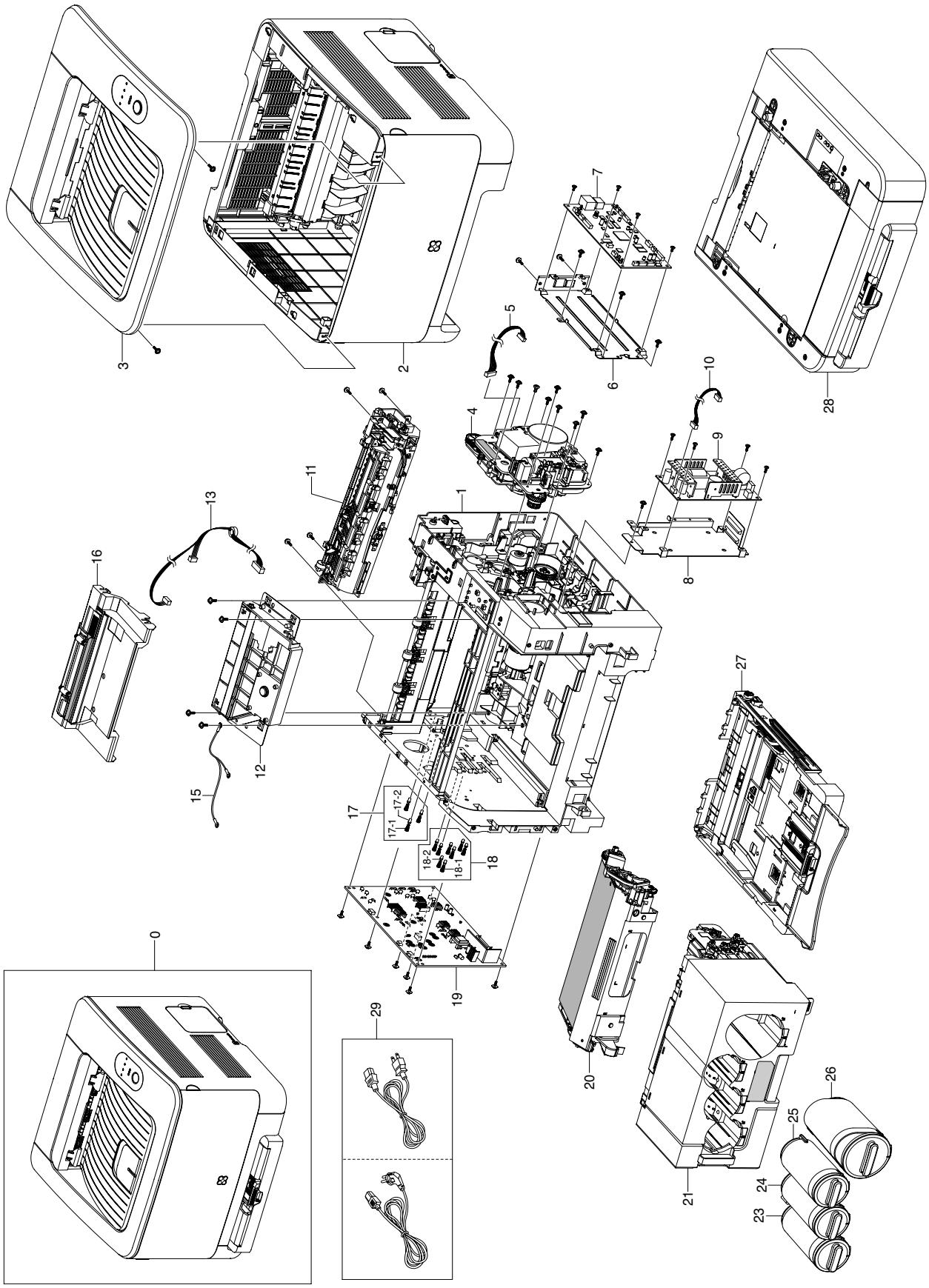
Samsung Color Laser Printer

The keynote of Product

High Performance /
High Quality Muti-path CLBP

- Model : only CLP 350N
- Speed(Color/Mono) : 5/20ppm(A4). 5/19ppm(Let)
- Printing resolution : 2,400 x 600 dpi
- Emulation : PCL6/PS3
- Memory expansion => Max.128MB
- Processor : 300MHz
- Interface : IEEE 802.3,Ethernet(10/100Mbps)
  Wireless: Not Supported
- Toner Cartridge :
  4K Toner(K), 2K toner(C, M, Y each)
- Printer Life : 200,000 pages
  Monthly Max. Duty : 25,000 pages/month

5.1 Main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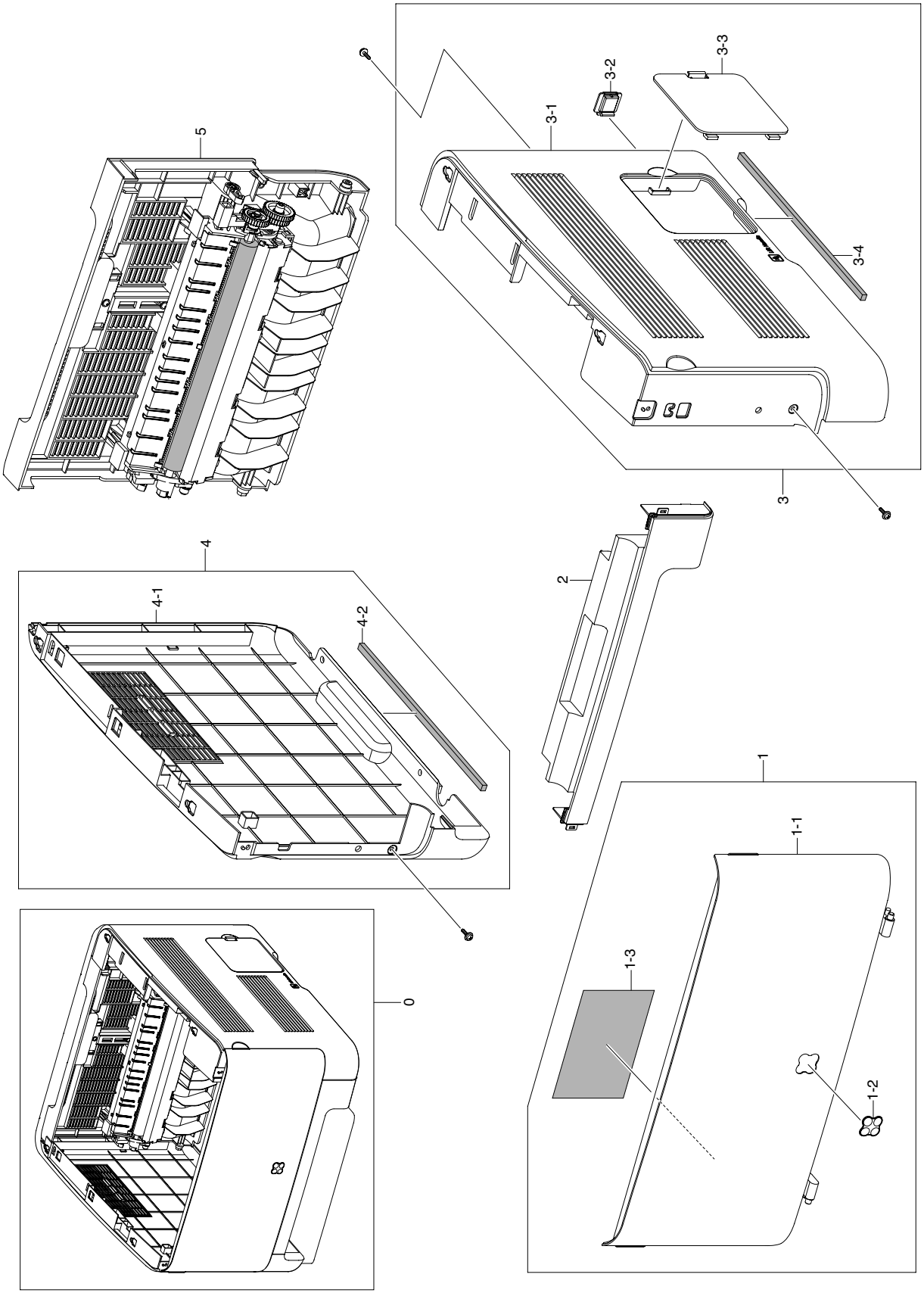
Main Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.1-0	CLP-350N	COLOR LBP 20 B / COLOR 5 PPM			
5.1-1	JC97-02994A	MEA UNIT-FRAME	1	SA	
5.1-2	JC97-03002A	MEA UNIT-COVER	1	SNA	
5.1-3	JC97-02992A	MEA UNIT-COVER TOP	1	SA	
5.1-4	JC96-04693A	ELA UNIT-DRIVE MAIN	1	SA	
5.1-5	JC39-00486A	CBF HARNESS-BLDC	1	SA	
5.1-6	JC63-00863A	SHIELD-P-MAIN LOWER	1	SNA	
5.1-7	JC92-01919A	PBA MAIN-CONTROLLER	1	SA	US.
5.1-7	JC92-01919B	PBA MAIN-CONTROLLER	1	SA	ETC.
5.1-8	JC63-01259A	SHIELD-SMPS	1	SNA	
5.1-9	JC44-00095A	SMPS-PSP_TYPE2_V1	1	SA	110V
5.1-9	JC44-00096A	SMPS-PSP_TYPE2_V2C	1	SA	220V
5.1-10	JC39-00670A	HARNESS-SMPS	1	SA	
5.1-11	JC96-04699A	ELA UNIT-FUSER	1	SA	110V
5.1-11	JC96-04700A	ELA UNIT-FUSER	1	SA	220V
5.1-12	JC59-00018F	UNIT-LSU	1	SA	
5.1-13	JC39-00483A	CBF HARNESS-LSU	1	SA	
5.1-15	JC39-00583A	CBF HARNESS-GND_FRAME	1	SA	
5.1-16	JC97-02656A	MEA UNIT-COVER LSU	1	SA	
5.1-17	JC97-02638A	MEA UNIT-TERMINAL GND	2	SA	
5.1-17-1	6107-001282	SPRING-CS	1	SA	
5.1-17-2	JC70-00050A	IPR-TERMINAL	1	SNA	
5.1-18	JC97-01771A	MEA UNIT-TERMINAL S	8	SA	
5.1-18-1	JC61-70929A	SPRING ETC-HV LARGE	1	SA	
5.1-18-2	JC70-00050A	IPR-TERMINAL	1	SNA	
5.1-19	JC44-00155A	HVPS	1	SA	
5.1-20	-	CARTRIDGE-TRANSFER	1	SNA	
5.1-21	-	ELA UNIT-OPC DEV SET	1	SNA	
5.1-23	-	ELA UNIT-TONER TANK C	1	SNA	
5.1-24	-	ELA UNIT-TONER TANK M	1	SNA	
5.1-25	-	ELA UNIT-TONER TANK Y	1	SNA	
5.1-26	-	ELA UNIT-TONER TANK K	1	SNA	
5.1-27	JC97-02332D	MEA-CASSETTE	1	SA	
5.1-28	JC96-04690A	SECOND CASSETTE	1	SNA	
5.1-29	3903-000042	CBF-POWER CORD	1	SA	110V(US.)
5.1-29	3903-000042	CBF-POWER CORD	1	SA	220V(ETC.)

5.2 Cover Unit

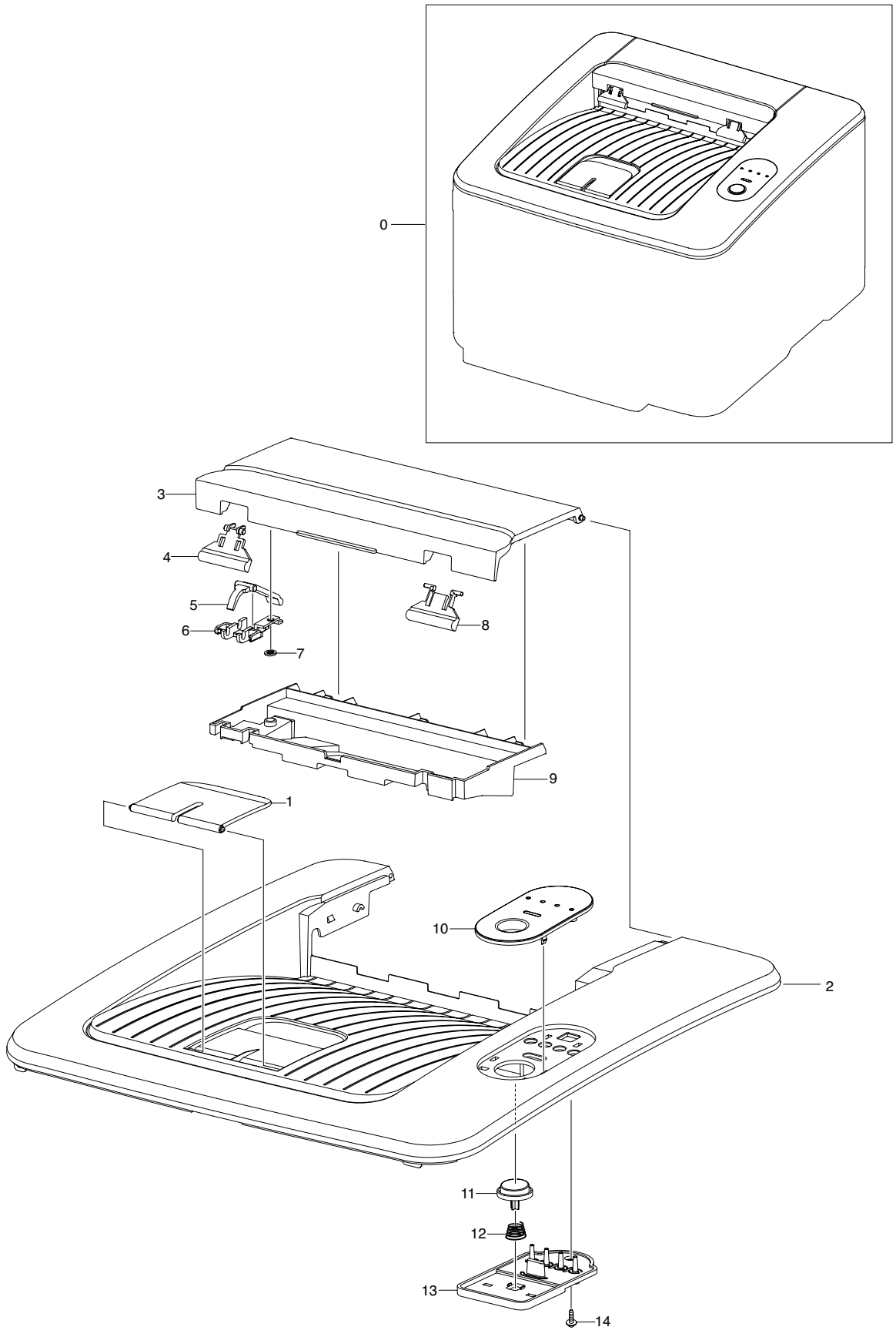


Cover Unit Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.2-0	JC97-03002A	MEA UNIT-COVER	1	SNA	
5.2-1	JC97-02996A	MEA-UNIT COVER FRONT	1	SA	
5.2-1-1	JC63-01475A	COVER-FRONT	1	SA	
5.2-1-2	JC64-00369A	BADGE-COLOR	1	SNA	
5.2-1-3	JC68-01997A	LABEL-INSTALLATION	1	SNA	
5.2-2	JC63-01478A	COVER-FRONT_DUMMY	1	SA	
5.2-3	JC97-02995A	MEA-UNIT COVER RIGHT	1	SA	
5.2-3-1	JC63-01477A	COVER-SIDE R	1	SA	
5.2-3-2	JC63-01489A	COVER-DUMMY SIDE	1	SA	
5.2-3-3	JC67-00160A	CAP-NETWORK	1	SNA	
5.2-3-4	JC72-01410A	SPONGE-COVER_SIDE R	1	SNA	
5.2-4	JC97-03009A	MEA-UNIT COVER LEFT	1	SA	
5.2-4-1	JC63-01476A	COVER-SIDE L	1	SA	
5.2-4-2	JC72-01409A	SPONGE-COVER-SIDE L	1	SNA	
5.2-5	JC97-02993A	MEA UNIT-COVER REAR	1	SA	

5.3 Top Cover

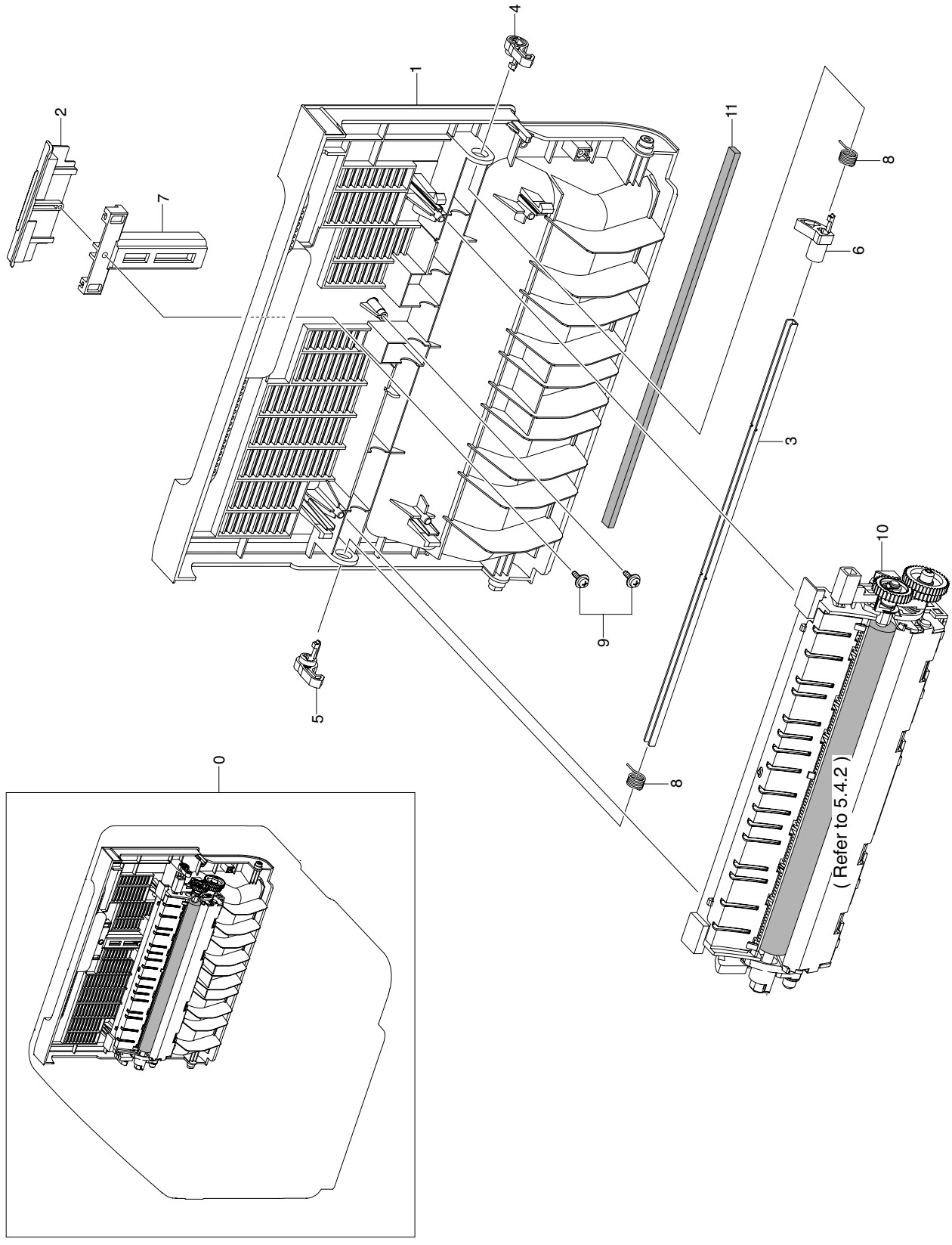


Top Cover Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.3-0	JC97-02992A	MEA UNIT-COVER TOP	1	SA	
5.3-1	JC63-01484A	COVER-STACKER	1	SA	
5.3-2	JC63-01483A	COVER-TOP	1	SA	
5.3-3	JC63-01482A	COVER-JAM	1	SA	
5.3-4	JC66-01296A	LEVER-BLOCKING	1	SNA	
5.3-5	JC66-01297A	LEVER-MID BLOCKING	1	SNA	
5.3-6	JC61-01761A	HOLDER-LEVER BLOCKING	1	SNA	
5.3-7	6044-000001	RING-CS	1	SNA	
5.3-8	JC72-01343A	PMO-SUB_M_STACKER	1	SA	
5.3-9	JC61-02166A	BRACKET-AIR CURTAIN	1	SA	
5.3-10	JC63-01481A	COVER-OPE	1	SA	
5.3-11	JC64-00337A	BUTTON-STOP	1	SA	
5.3-12	6107-001169	SPRING-CS	1	SA	
5.3-13	JC63-01480A	COVER-LED	1	SA	
5.3-14	6002-000440	SCREW-TAPPING	1	SNA	

5.4.1 Rear Cover

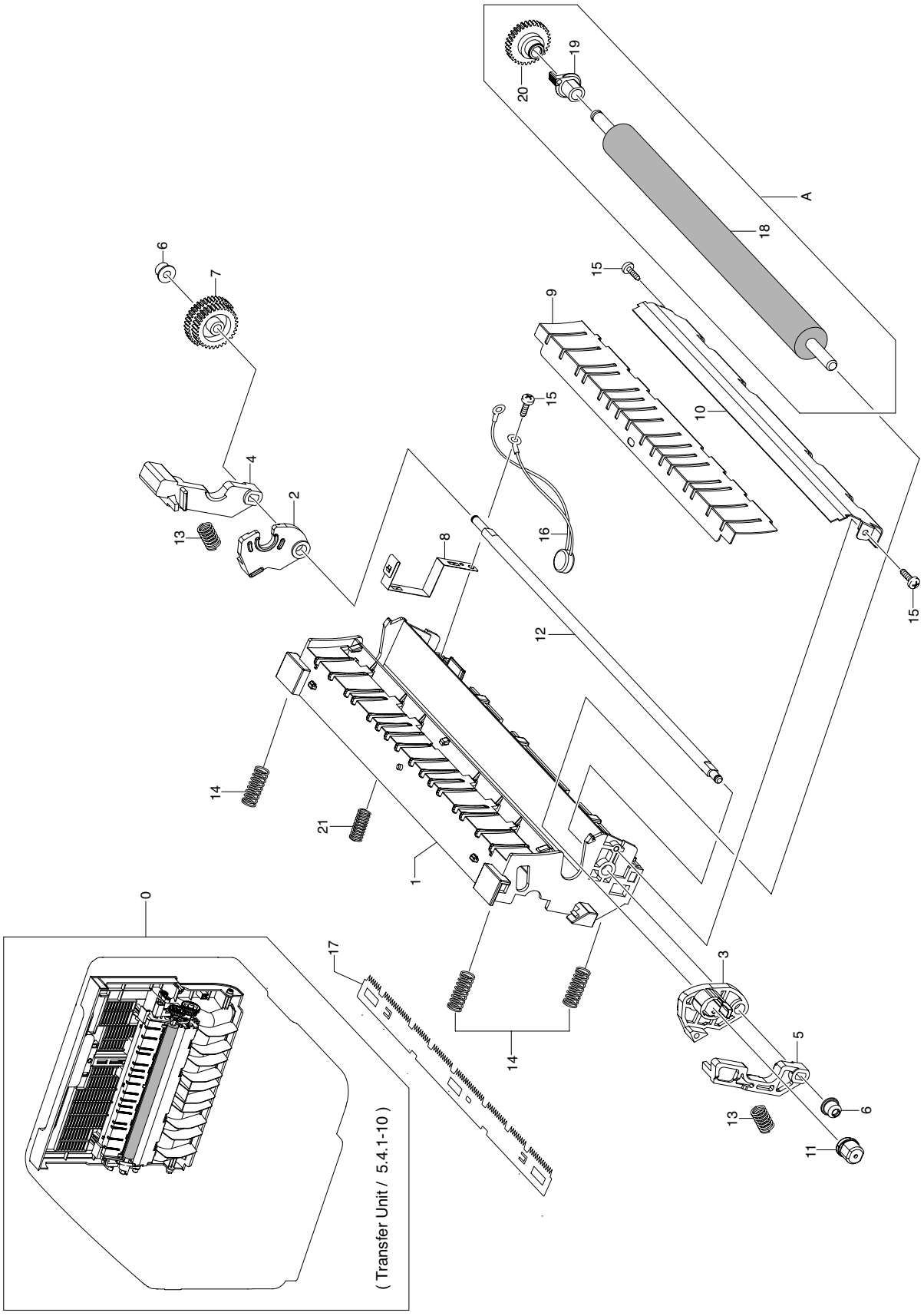


Rear Cover Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.4.1-0	JC97-02993A	MEA UNIT-COVER REAR	1	SA	
5.4.1-1	JC63-01479A	COVER-REAR	1	SA	
5.4.1-2	JC64-00336A	BUTTON-REAR OPEN	1	SA	
5.4.1-3	JC66-01089A	SHAFT-P-LOCKBAR REAR	1	SNA	
5.4.1-4	JC61-01461A	HOLDER-M-HOOK REAR R	1	SNA	
5.4.1-5	JC61-01456A	HOLDER-M-HOOK REAR L	1	SNA	
5.4.1-6	JC61-01462A	HOLDER-M-HOOK REAR C	1	SNA	
5.4.1-7	JC66-01587A	LEVER-REAR	1	SA	
5.4.1-8	6107-001268	SPRING-TS	2	SA	
5.4.1-9	6003-000196	SCREW-TAPTITE	2	SNA	
5.4.1-10	JC96-03990A	ELA UNIT-TRANSFER	1	SA	

5.4.2 Transfer Unit

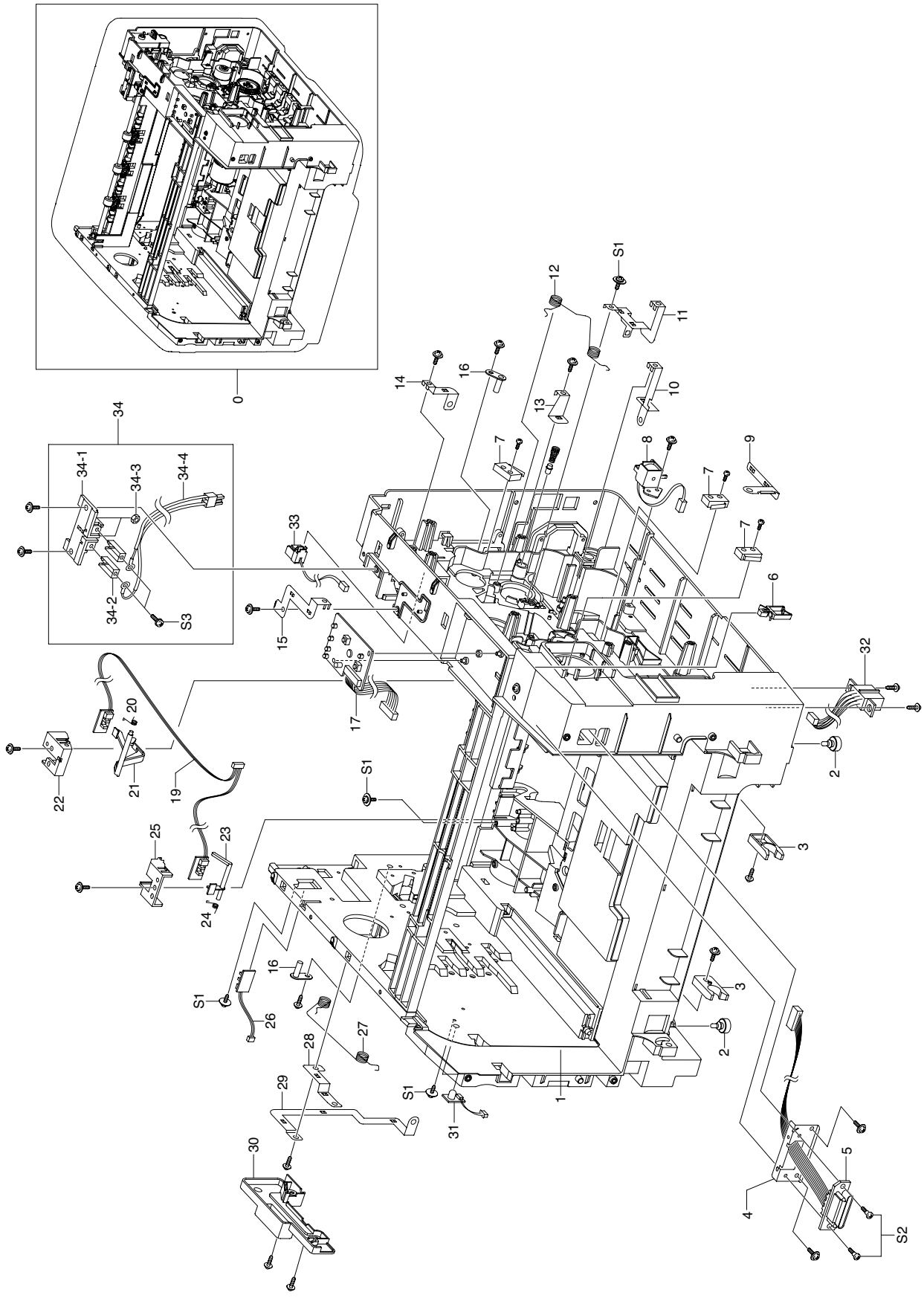


Transfer Unit Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.4.2-0	JC96-03990A	ELA UNIT-TRANSFER	1	SA	
5.4.2-1	JC61-01466A	FRAME-M-T2 BASE	1	SNA	
5.4.2-2	JC66-01121A	LEVER-M-T2 HOLDER R	1	SNA	
5.4.2-3	JC66-01122A	LEVER-M-T2 HOLDER L	1	SNA	
5.4.2-4	JC66-01074A	LEVER-M-RELEASE R	1	SNA	
5.4.2-5	JC66-01075A	LEVER-M-RELEASE L	1	SNA	
5.4.2-6	JC61-01469A	HOLDER-M-LOCATE SHAFT	2	SNA	
5.4.2-7	JC66-01081A	GEAR-RDCN T2 DRIVE	1	SA	
5.4.2-8	JC61-01467A	PLATE-P-T2 GROUND	1	SNA	
5.4.2-9	JC61-01468A	GUIDE-P-T2 OUTPUT	1	SNA	
5.4.2-10	JC61-01470A	GUIDE-P-T2 INPUT	1	SNA	
5.4.2-11	JC61-01543A	BUSH-CHARGE LEFT	1	SNA	
5.4.2-12	JC66-01072A	SHAFT-LOCATE	1	SNA	
5.4.2-13	6107-001290	SPRING-CS	2	SA	
5.4.2-14	6107-001278	SPRING-CS	3	SA	
5.4.2-15	6003-000282	SCREW-TAPTITE	3	SNA	
5.4.2-16	JC39-00036A	CBF HARNESS-OPE GND	1	SA	
5.4.2-17	JC70-10232A	IPR-PLATE SAW	1	SA	
5.4.2-18	JC66-01104A	ROLLER-TRANSFER	1	SNA	
5.4.2-19	JC61-01471A	HOLDER-M-T2 ROLLER R	1	SNA	
5.4.2-20	JC66-01073A	GEAR-T2 ROLLER	1	SA	
5.4.2-21	6107-001246	SPRING-CS	1	SNA	
5.4.2-A	JC97-02628A	MEA UNIT-T2 ROLLER	1	SA	

5.5 Frame 1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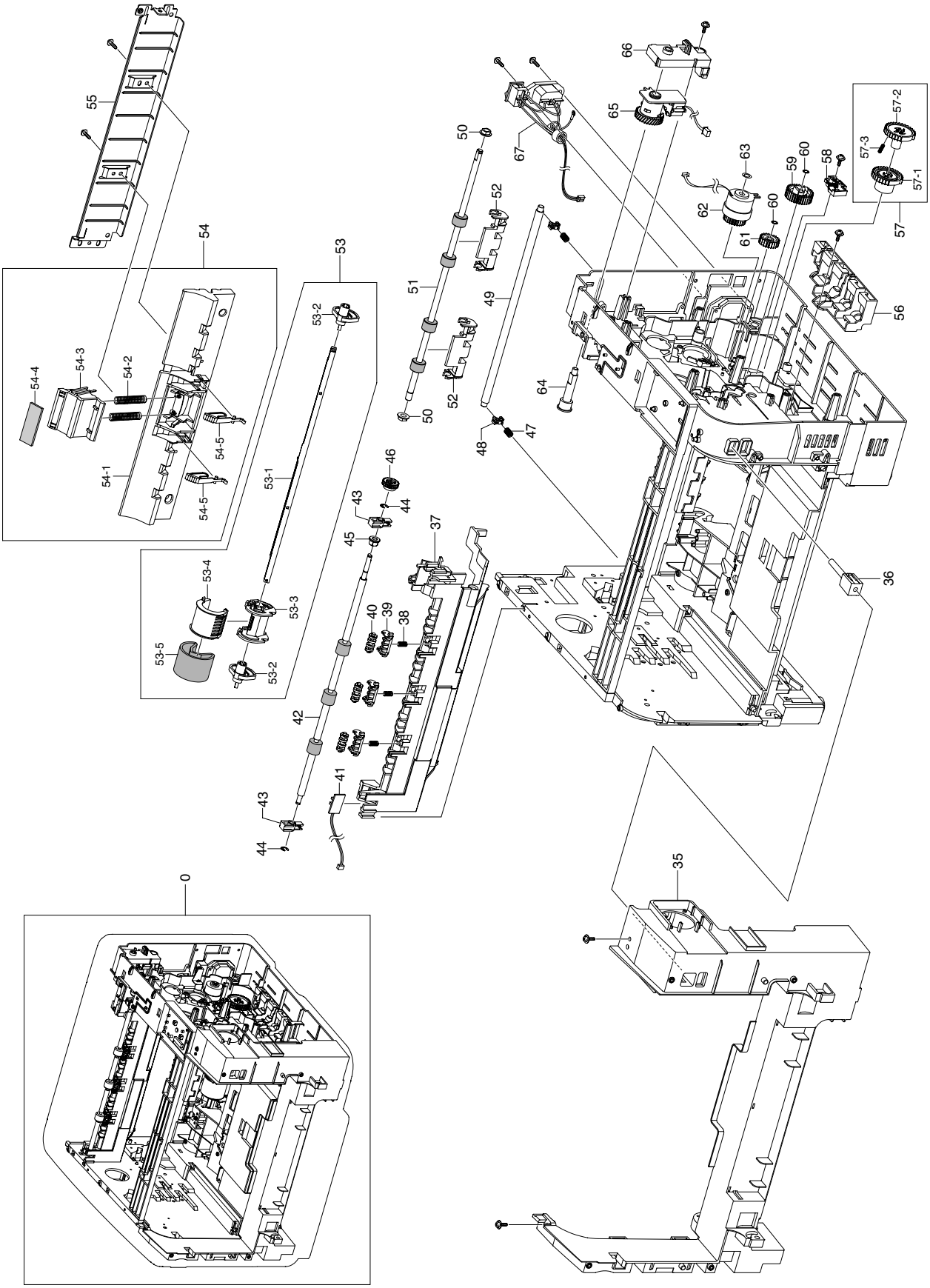
Frame 2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Frame Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

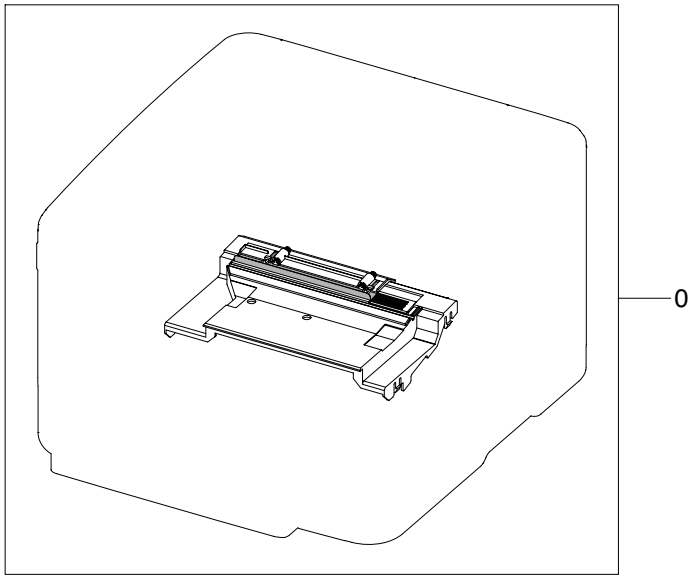
Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.5-0	JC97-02994A	MEA UNIT-FRAME	1	SA	
5.5-1	JC61-01443A	FRAME-M BASE GOGH	1	SNA	
5.5-2	JC61-40001A	FOOT-ML80	2	SA	
5.5-3	JC66-00050A	CAM-CATCH	2	SA	
5.5-4	JC61-01521A	PLATE-P-DRAW CONNECTOR	1	SNA	
5.5-5	JC39-00774A	HARNESS-MAIN DRAWER	1	SA	
5.5-S2	6009-001396	SCREW-SPECIAL	2	SNA	
5.5-6	6502-001093	CABLE CLAMP	1	SA	
5.5-7	JC39-00498A	CBF HARNESS-COVER S/W	3	SA	
5.5-8	JC33-00021A	SOLENOID-PICK UP	1	SA	
5.5-9	JC61-01487A	PLATE-P-GROUND SCF	1	SA	
5.5-10	JC61-01483A	PLATE-P-GROUND LSU	1	SNA	
5.5-11	JC61-01485A	PLATE-P-GROUND REGI	1	SNA	
5.5-12	JC61-01547A	SPRING ETC-OPC LOCK R	1	SA	
5.5-13	JC61-01484A	PLATE-P-GROUND T2	1	SNA	
5.5-14	JC61-01476A	PLATE-P-GROUND FUSER	1	SNA	
5.5-15	JC61-01489A	PLATE-P-GROUND EXIT	1	SNA	
5.5-16	JC61-01537A	PLATE-P-SHAFT LACK	2	SNA	
5.5-17	JC92-01925A	PBA SUB-OPE	1	SA	
5.5-19	JC96-04002A	ELA HOU-REGI_EMP	1	SA	
5.5-20	JB61-00076A	SPRING ETC-TORSION DOC (CC2-F)	1	SA	
5.5-21	JC66-01119A	LEVER-M-ACTUATOR EMPTY	1	SA	
5.5-22	JC61-01481A	HOLDER-M-ACTUATOR EMPTY	1	SNA	
5.5-23	JC66-01133A	LEVER-M-ACTUATOR FEED	1	SNA	
5.5-24	JC61-00018A	SPRING ETC-SENSOR	1	SNA	
5.5-25	JC61-01480A	HOLDER-M-ACTUATOR FEED	1	SNA	
5.5-26	JC92-01718A	PBA SUB-EXIT	1	SA	
5.5-27	JC61-01546A	SPRING ETC-OPC LOCK L	1	SA	
5.5-28	JC61-01451A	PLATE-P-GROUND OPC L	1	SNA	
5.5-29	JC61-01486A	PLATE-P-GROUND PICKUP	1	SNA	
5.5-30	JC63-00854A	COVER-M-GROUND OPC	1	SNA	
5.5-31	JC92-01723A	PBA SUB-WASTE_T	1	SA	
5.5-32	JC39-00606A	HARNESS-SCF	1	SA	
5.5-33	JC39-00493A	CBF HARNESS-THER	1	SA	
5.5-34	JC97-02639A	MEA UNIT-FU TERMINAL	1	SA	
5.5-34-1	JC72-41010A	PMO-HOUSING TERMINAL	1	SA	
5.5-34-2	JC70-10961A	IPR-TERMINAL FU	2	SA	
5.5-34-3	6021-000222	NUT-HEXAGON	2	SNA	
5.5-34-4	JC39-00581A	CBF HARNESS-FUSER_AC	1	SA	
5.5-34-S3	6006-000127	SCREW-MACHINE	2	SNA	
5.5-37	JC61-01477A	FRAME-M-EXIT	1	SNA	
5.5-38	6107-001163	SPRING-CS	3	SA	
5.5-39	JC61-01568A	HOLDER-M-EXIT F DOWN	3	SNA	

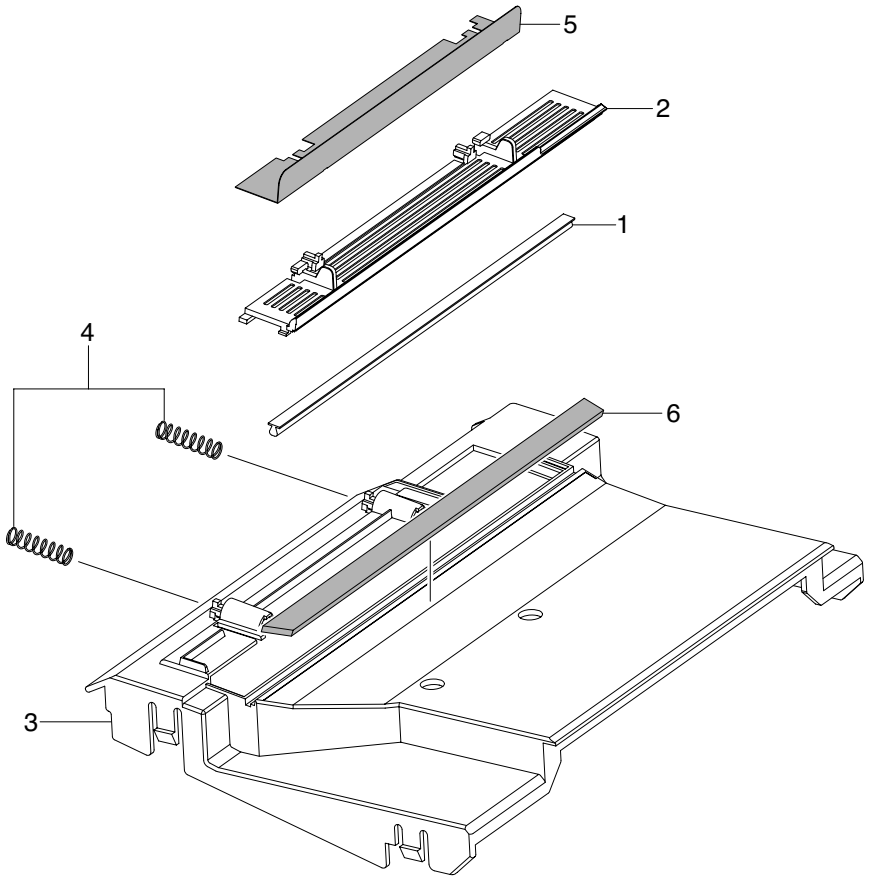
Frame Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.5-40	JC66-01149A	ROLLER-EXIT MAIN	3	SA	
5.5-41	JC92-01718A	PBA SUB-EXIT	1	SA	
5.5-42	JC66-01040A	ROLLER-EXIT F DOWN	1	SNA	
5.5-43	JC61-00829A	HOLDER-BEARING EXIT F/DOWN	2	SA	
5.5-44	6044-000159	RING-C	2	SA	
5.5-45	JC61-00424A	BUSH-4	1	SA	
5.5-46	JC66-00810A	GEAR-EXIT_DRV17	1	SA	
5.5-47	JC61-70911A	SPRING ETC-EXIT ROLL FD	2	SA	
5.5-48	JC61-00829A	HOLDER-BEARING EXIT F/DOWN	2	SNA	
5.5-49	JC66-01120A	SHAFT-FEED IDLE	1	SNA	
5.5-50	JC61-00699A	BUSH-D6/L4	3	SA	
5.5-51	JC66-01128A	ROLLER-REGI	1	SNA	
5.5-52	JC61-01570A	GUIDE-M-PAPER	2	SNA	
5.5-53	JC97-03006A	MEA UNIT-PICKUP ROLL	1	SA	
5.5-53-1	JC66-01080A	SHAFT-P-PICKUP	1	SNA	
5.5-53-2	JC66-01596A	CAM-PICK UP	2	SNA	
5.5-53-3	JC61-01151A	HOUSING-M-PICK_U	1	SA	
5.5-53-4	JC61-01173A	HOUSING-M-PICK_UP B	1	SA	
5.5-53-5	JC73-00211A	RUBBER-PICK_UP	1	SA	
5.5-54	not assign	PICP UP ASSEMBLY	1	SNA	
5.5-54-1	JC61-01473A	GUIDE-M-PICK UP	1	SA	
5.5-54-2	JC61-70911A	SPRING ETC-EXIT ROLL FD	2	SA	
5.5-54-3	JC61-01787A	HOLDER-PAD	1	SA	
5.5-54-4	JC69-00961A	PAD-FRICTION	1	SA	
5.5-54-5	JC66-00815A	LEVER-M-KICKER P/U	2	SA	
5.5-55	JC61-01790A	PLATE-PICK UP	1	SNA	
5.5-56	JC61-01478A	GUIDE-M-HARNESS	1	SNA	
5.5-57	JC97-02688A	MEA UNIT-PICK UP GEAR	1	SA	
5.5-57-1	JC66-01076A	GEAR-PICK UP A	1	SA	
5.5-57-2	JC66-01077A	GEAR-PICK UP B	1	SA	
5.5-57-3	6107-001167	SPRING-CS	1	SA	
5.5-58	JC61-01548A	HOLDER-M-CAM	2	SA	
5.5-59	JC66-01056A	GEAR-REGI DRIVE	1	SA	
5.5-60	6044-000001	RING-CS	2	SA	
5.5-61	JC66-00346A	GEAR-MP/DUP DRV	1	SA	
5.5-62	JC47-00009C	CLUTCH-REGI	1	SA	
5.5-63	6031-001255	WASHER-PLAIN	9	SNA	
5.5-64	JC66-01207A	SHAFT-M-CLUTCH FUSER	1	SA	
5.5-65	JC47-00014A	MEP-CLUTCH CAM	1	SA	
5.5-66	JC61-01566A	HOLDER-M-CLUTCH FUSER	1	SNA	
5.5-67	JC39-00497A	CBF HARNESS-INLET	1	SA	

5.6 LSU Cover



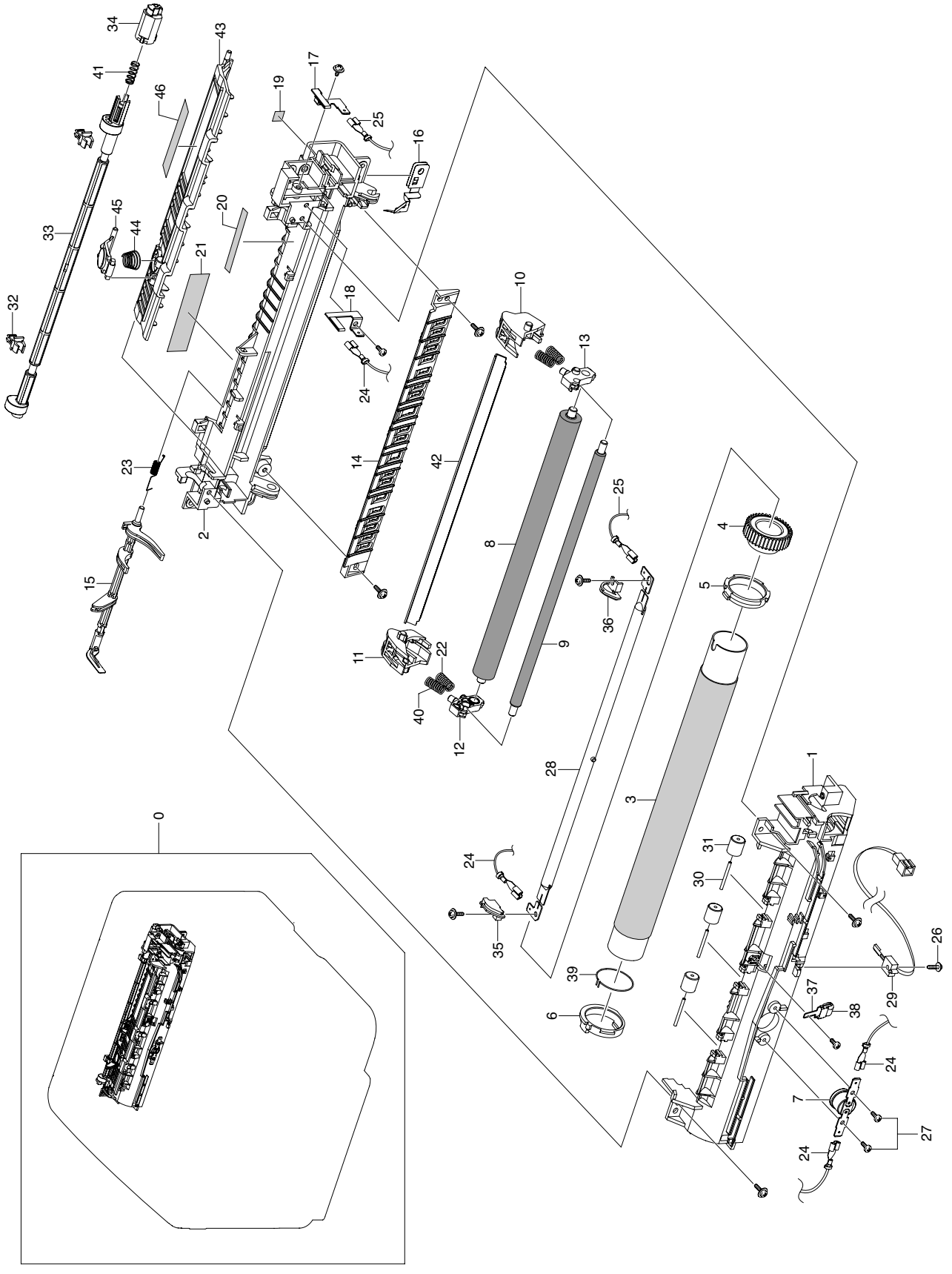


LSU Cover Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.6-0	JC97-02656A	MEA UNIT-COVER LSU	1	SA	
5.6-1	JC67-00168A	BRUSH-LSU	1	SNA	
5.6-2	JC64-00267A	SHUTTER-LSU	1	SNA	
5.6-3	JC63-00839A	COVER-M-LSU	1	SNA	
5.6-4	6107-001295	SPRING-CS	2	SNA	
5.6-5	JC63-01093A	SHEET-LSU FRONT	1	SNA	
5.6-6	JC62-00338A	SEAL-COVER LSU	1	SNA	

5.7 Fuser Ass'y

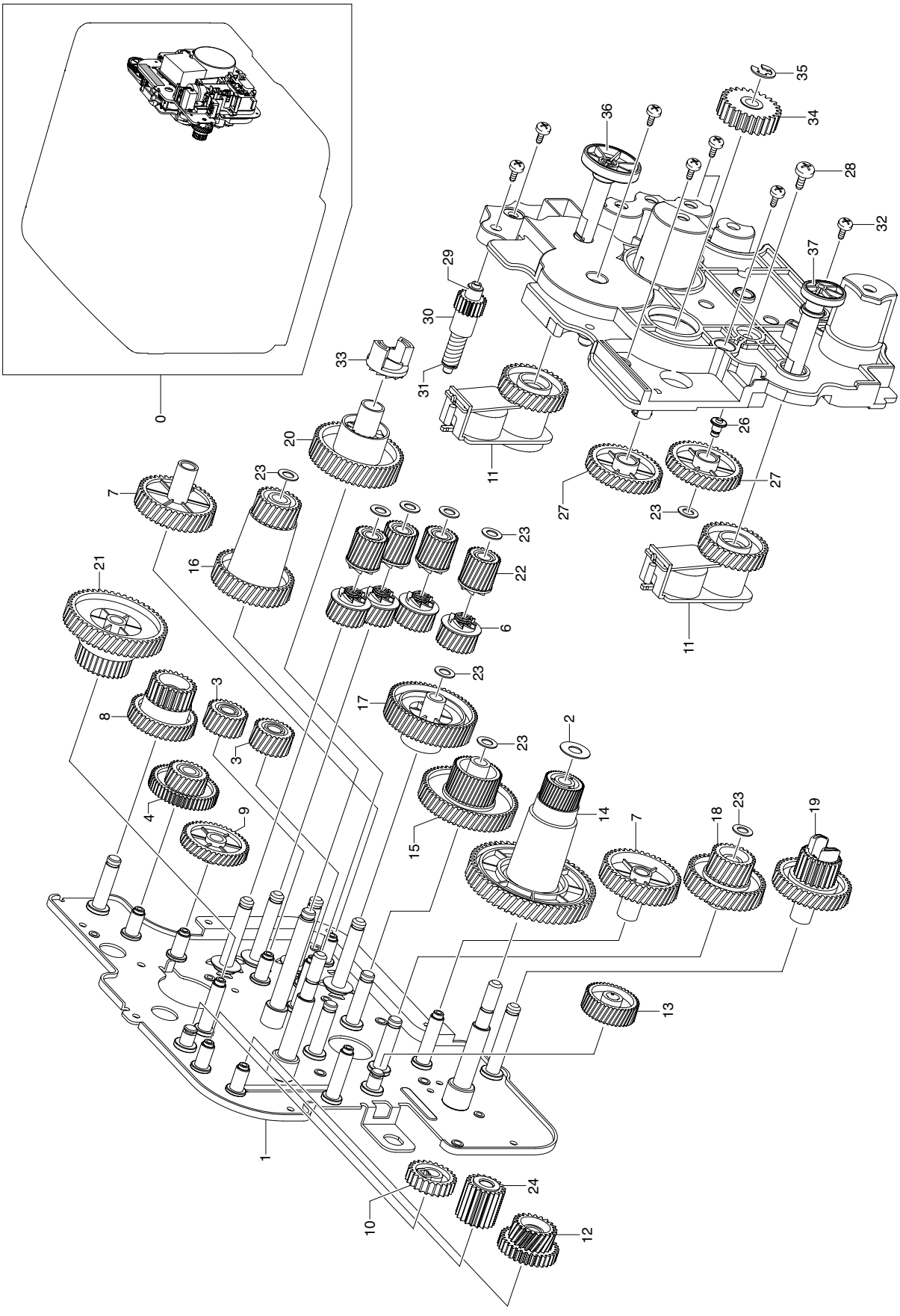


Fuser Ass'y Parts List

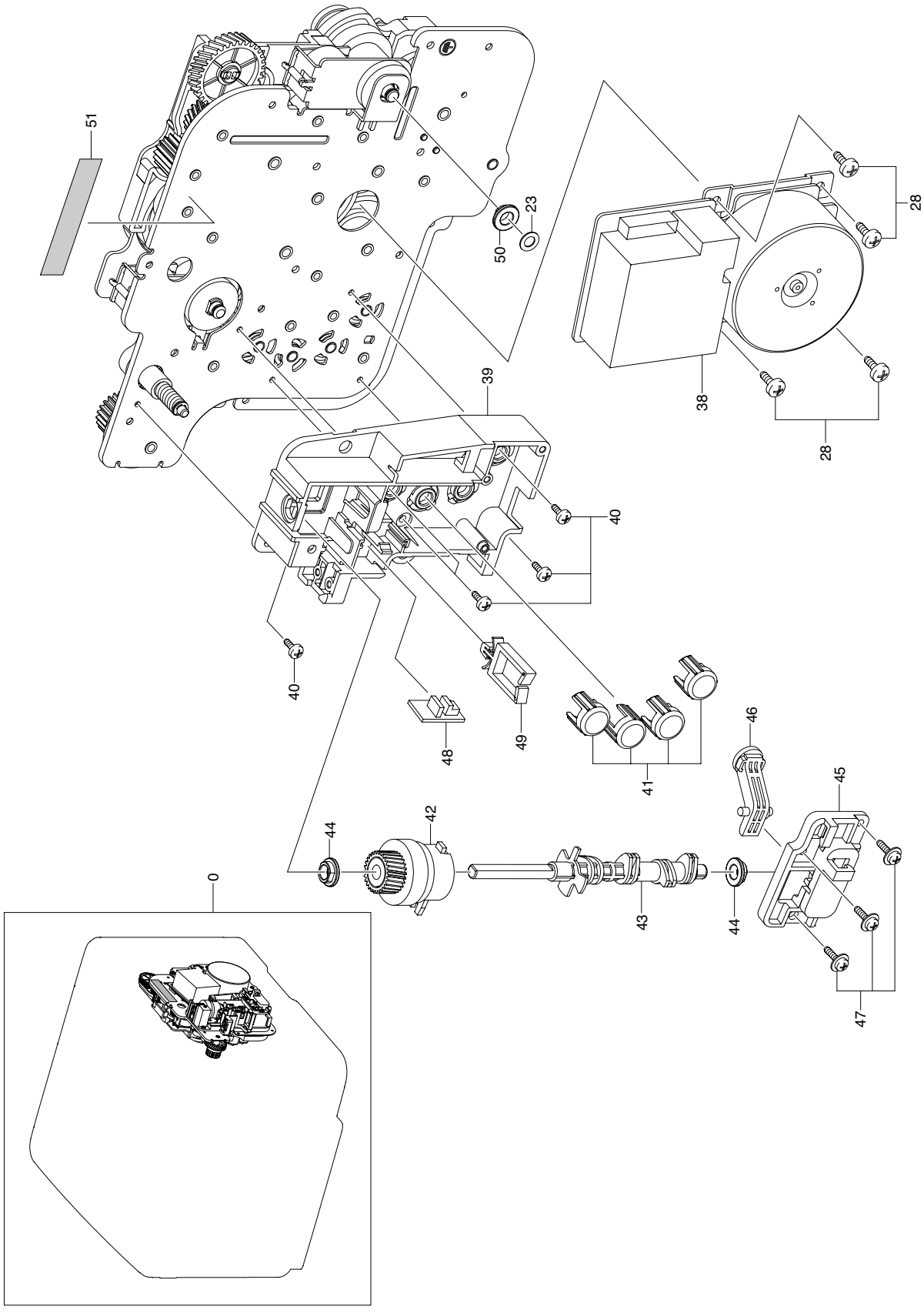
SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.7-0	JC96-04699A	ELA UNIT-FUSER	1	SA	110V
5.7-0	JC96-04700A	ELA UNIT-FUSER	1	SA	220V
5.7-1	JC61-01474A	FRAME-M-UPPER FUSER	1	SNA	
5.7-2	JC61-01475A	FRAME-M-LOWER FUSER	1	SNA	
5.7-3	JC66-01078A	ROLLER-HEAT	1	SA	
5.7-4	JC66-00669A	GEAR-FUSER	1	SA	
5.7-5	JC66-10902A	BEARING-H/R L	1	SA	
5.7-6	JC72-00814A	PMO-BEARING H/R-F	1	SA	
5.7-7	4712-001027	THERMOSTAT	1	SA	
5.7-8	JC66-01079A	ROLLER-PRESSURE	1	SA	
5.7-9	JC66-01111A	ROLLER-PRESSURE SHAFT	1	SNA	
5.7-10	JC61-01490A	HOLDER-M-BUSH 2PR_R	1	SNA	
5.7-11	JC61-01491A	HOLDER-M-BUSH 2PR_L	1	SNA	
5.7-12	JC61-01534A	BUSH-M-2PR L	1	SNA	
5.7-13	JC61-01535A	BUSH-M-2PR R	1	SNA	
5.7-14	JC61-01522A	GUIDE-M-INPUT FUSER	1	SNA	
5.7-15	JC66-01110A	LEVER-M-ACTUATOR EXIT	1	SNA	
5.7-16	JC61-01476A	PLATE-P-GROUND FUSER	1	SNA	
5.7-17	JC70-00518A	ELECTRODE-P-AC R	1	SNA	
5.7-18	JC70-00519A	ELECTRODE-P-AC L	1	SNA	
5.7-22	6107-001246	SPRING-CS	2	SNA	
5.7-23	JC61-01271A	SPRING ETC-ACTUATOR	1	SA	
5.7-24	JC39-00500A	CBF HARNESS-FUSE_LINK1	2	SA	
5.7-25	JC39-00501A	CBF HARNESS-FUSE_LINK2	1	SA	
5.7-28	4713-001209	LAMP-HALOGEN	1	SA	110V
5.7-28	4713-001210	LAMP-HALOGEN	1	SA	220V
5.7-29	1404-001368	THERMISTOR-NTC ASSY	1	SA	
5.7-30	JC70-00064A	IPR-PIN ROLLER EXIT	3	SNA	
5.7-31	JC72-20902A	PEX-ROLLER F/UP(2)	3	SA	
5.7-32	JC72-00382A	PMO-BUSHING TX	2	SNA	
5.7-33	JC66-01206A	SHAFT-M-CAM FUSER	1	SNA	
5.7-34	JC61-01647A	HOLDER-M-SHAFT FUSER	1	SNA	
5.7-35	JC66-01147A	LEVER-M-RELEASE	1	SNA	
5.7-36	JC66-01148A	LEVER-M-LINK FUSER	1	SA	
5.7-37	JC66-01309A	ROLLER-DUMMY	1	SNA	
5.7-39	JC61-01679A	SPRING ETC-GROUND	1	SA	
5.7-40	6107-001267	SPRING-CS	2	SA	
5.7-41	6107-001290	SPRING-CS	1	SA	
5.7-42	JC97-02778A	MEA UNIT-GUIDE PR	1	SNA	

5.8 Main Drive 1



Main Drive 2



Main Drive Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

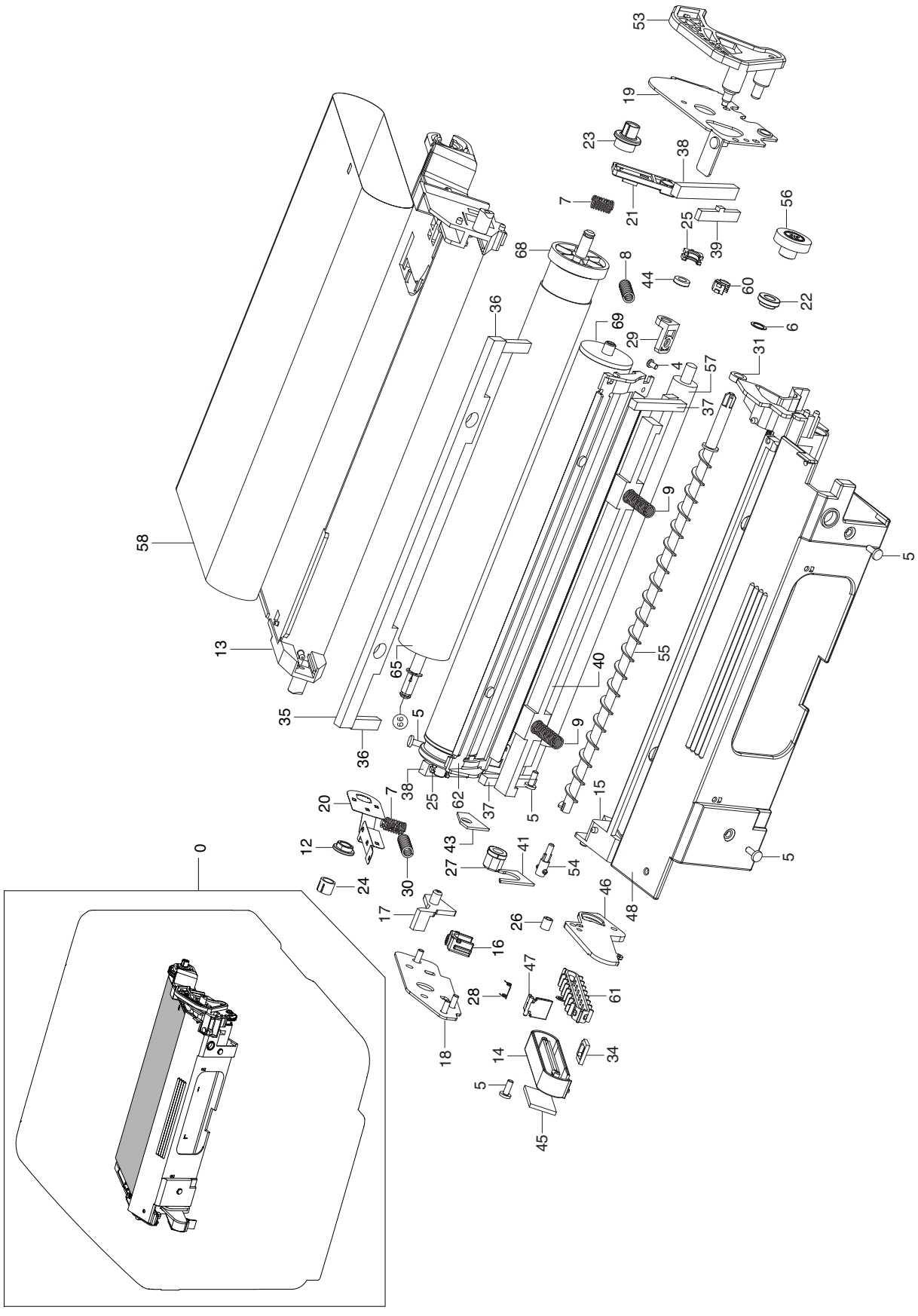
Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.8-0	JC96-04693A	ELA UNIT-DRIVE MAIN	1	SA	
5.8-1	JC61-01450A	BRACKET-P-DRIVE MOTOR	1	SNA	
5.8-3	JC66-01042A	GEAR-IDLE DEVE Z19	2	SA	
5.8-4	JC66-01052A	GEAR-RDCN DEVE CAM	1	SA	
5.8-5	JC66-01041A	GEAR-DEVE COUPLING	4	SA	
5.8-7	JC66-01047A	GEAR-IDLE Z39	2	SA	
5.8-8	JC66-01065A	GEAR-TONER DRIVE	1	SA	
5.8-9	JC66-01046A	GEAR-IDLE Z33	1	SA	
5.8-10	JC66-00763A	GEAR-M-PICK UP IDLE	1	SA	
5.8-11	JC47-00007E	CLUTCH-CAM	2	SA	
5.8-12	JC66-01208A	GEAR-RDCN FUSER CAM	1	SA	
5.8-13	JC66-01045A	GEAR-IDLE ITB Z43	1	SA	
5.8-14	JC66-01048A	GEAR	1	SA	
5.8-15	JC66-01054A	GEAR-RDCN OPC	1	SA	
5.8-17	JC66-01051A	GEAR-RDCN DEVE	1	SA	
5.8-18	JC66-01055A	GEAR-RDCN P_PATH	1	SA	
5.8-19	JC66-01050A	GEAR	1	SA	
5.8-20	JC66-01044A	GEAR-FUSER DRIVE 1	1	SA	
5.8-21	JC66-01053A	GEAR-RDCN EXIT	1	SA	
5.8-22	JC66-01043A	GEAR-DEVE DRIVE	4	SA	
5.8-23	6031-001255	WASHER-PLAIN	1	SNA	
5.8-24	JC66-00771A	GEAR-_M_IDLE PICKUP	1	SA	
5.8-25	JC61-01459A	BRACKET-M-DRIVE FRONT	1	SNA	
5.8-26	JC66-01061A	SHAFT-IDLE D8	1	SNA	
5.8-27	JC66-01064A	GEAR-IDLE Z37	2	SA	
5.8-29	JC66-01060A	SHAFT-WORM GEAR	1	SNA	
5.8-30	JC66-01057A	GEAR-WORM DEVE CAM	1	SA	
5.8-31	6044-000159	RING-C	1	SA	
5.8-32	6001-000130	SCREW-MACHINE	7	SNA	
5.8-33	JC66-01070A	LATCH-M-HUB CLUTCH	1	SNA	
5.8-34	JC66-01155A	GEAR-FUSER RDCN OUT V	1	SNA	
5.8-35	6044-000231	RING-E	1	SNA	
5.8-36	JC66-01068A	SHAFT-M-T2 CAM	1	SA	
5.8-37	JC66-01067A	SHAFT-M-ITB CLEAN CAM	1	SA	
5.8-38	JC31-00041A	MOTOR DC-DEVE DRIVE	1	SA	
5.8-40	6003-000301	SCREW-TAPTITE	1	SNA	
5.8-41	JC61-02173A	BRACKET-DEVE CAM	1	SNA	
5.8-42	6003-000269	SCREW-TAPTITE	5	SA	
5.8-43	JC67-00130A	CAP-M-PUSH COUPLING	4	SA	
5.8-44	JC47-00018A	CLUTCH-DEVE CAM	1	SNA	
5.8-45	JC66-01590A	SHAFT-DEVE CAM	1	SA	
5.8-46	JC92-01720A	PBA SUB-DEVE_HOME	1	SA	
5.8-47	JC61-01453A	HOLDER-M-LINK BLACK	1	SA	

Main Drive Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.8-48	JC66-01097A	LINK-M-PUSH BLACK CAP	1	SA	
5.8-49	JC61-00699A	BUSH-D6/L4	3	SA	
5.8-50	6502-001093	CABLE CLAMP	1	SA	
5.8-52	JF68-10532B	LABEL(P)-BAR CODE	1	SNA	

5.9 Cartridge-Transfer



Cartridge-Transfer Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

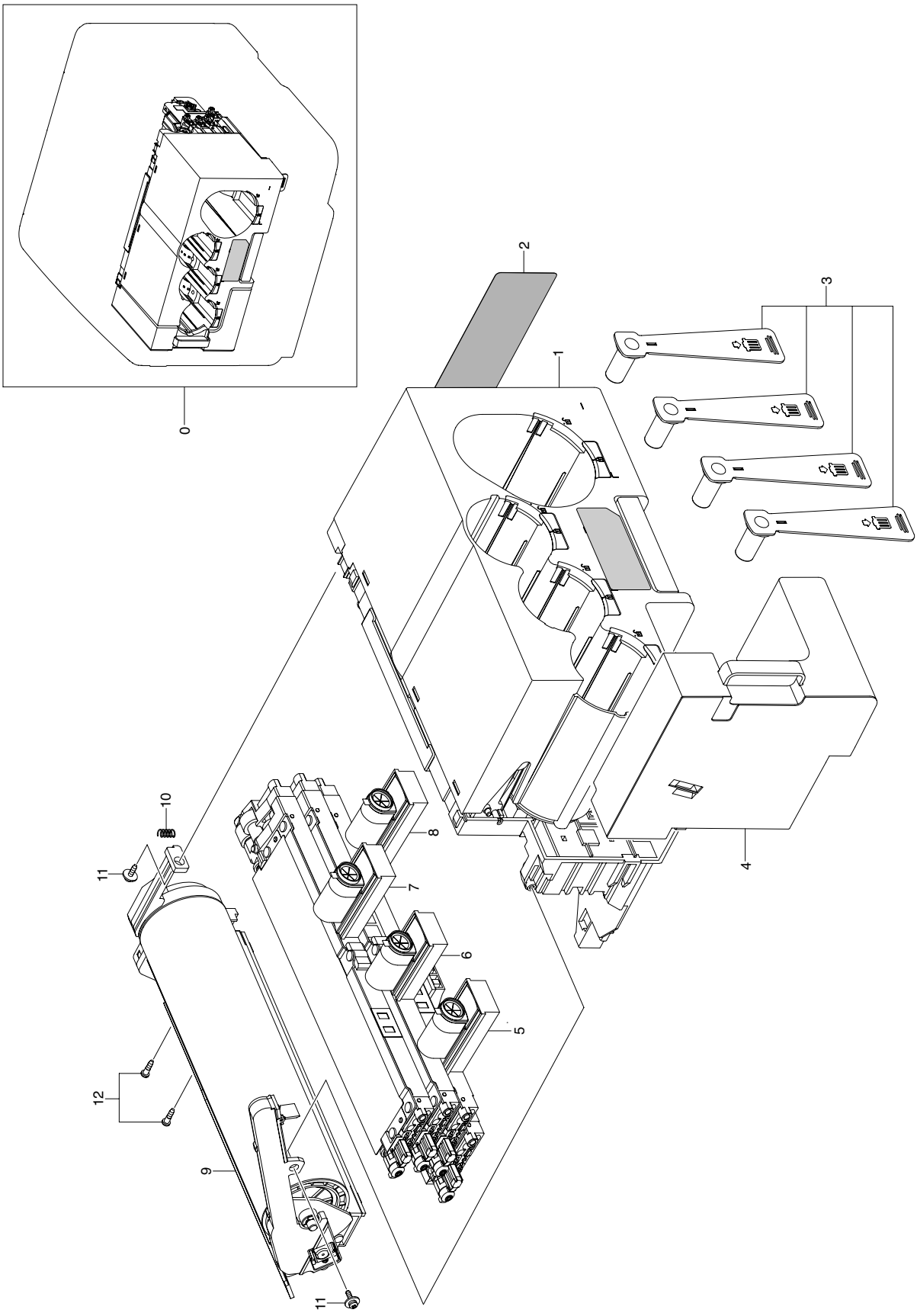
Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.9-0	-	CARTRIDGE-TRANSFER	1	SNA	
5.9-3	0604-001257	PHOTO-INTERRUPTER	1	SNA	
5.9-4	6001-000485	SCREW-MACHINE	2	SNA	
5.9-5	6003-000282	SCREW-TAPTITE	11	SNA	
5.9-6	6031-000019	WASHER-PLAIN	3	SA	
5.9-7	6107-001287	SPRING-CS	2	SNA	
5.9-8	6107-001313	SPRING-CS	1	SNA	
5.9-9	6107-001306	SPRING-CS	2	SA	
5.9-11	JC39-00773A	HARNESS-ITB	1	SNA	
5.9-12	JC61-00699A	BUSH-D6/L4	1	SA	
5.9-13	JC61-01494A	FRAME-M-ITB	1	SNA	
5.9-14	JC61-01495A	FRAME-M-WASTE ITB	1	SNA	
5.9-15	JC61-01497A	HOUSING-M-CLEANING ITB	1	SNA	
5.9-16	JC61-01498A	HOLDER-M-BUSH CHARGE	1	SNA	
5.9-17	JC61-01499A	GUIDE-M-POLE ITB	1	SNA	
5.9-18	JC61-01502A	BRACKET-P-HOUSING LEFT	1	SNA	
5.9-19	JC61-01503A	BRACKET-P-HOUSING RIGHT	1	SNA	
5.9-20	JC61-01504A	PLATE-P-GND ITB	1	SNA	
5.9-21	JC61-01506A	HOLDER-M-HOME SENSOR	1	SNA	
5.9-22	JC61-01536A	BUSH-M-CHARGE CLEANING	1	SNA	
5.9-23	JC61-01539A	BUSH-M-DRIVE ITB	1	SNA	
5.9-24	JC61-01540A	BUSH-M-ITB	1	SNA	
5.9-25	JC61-01541A	BUSH-M-TR ITB	2	SNA	
5.9-26	JC61-01542A	BUSH-M-IDLER WASTE BELT	1	SNA	
5.9-27	JC61-01543A	BUSH-CHARGE LEFT	1	SNA	
5.9-28	JC61-01701A	SPRING ETC-SHUTTER	1	SNA	
5.9-29	JC61-01777A	HOLDER-BLADE ITB	2	SNA	
5.9-30	JC61-01803A	SPRING ETC-GROUND ITB	1	SNA	
5.9-31	JC62-00210A	SEAL-AUGER OPC	1	SNA	
5.9-32	JC62-00212A	SEAL-BELT ITB	1	SNA	
5.9-33	JC62-00213A	SEAL-LOW ITB	1	SNA	
5.9-34	JC62-00217A	SEAL-COVER WASTE	1	SNA	
5.9-35	JC62-00219A	SEAL-BACK ITB	1	SNA	
5.9-36	JC62-00221A	SEAL-BACK ITB RIGHT	2	SNA	
5.9-37	JC62-00222A	SEAL-SIDE ITB LEFT	2	SNA	
5.9-38	JC62-00223A	SEAL-SIDE ITB RIGHT	2	SNA	
5.9-39	JC62-00229A	SEAL-BLADE ITB LEFT	2	SNA	
5.9-40	JC62-00232A	SEAL-TOP ITB	1	SNA	
5.9-41	JC62-00257A	SEAL-FRAME WASTE ITB	1	SNA	
5.9-42	JC62-00258A	SEAL-WASTE OPC	1	SNA	
5.9-43	JC62-00281A	SEAL-HOUSING ITB L	1	SNA	
5.9-44	JC62-00282A	SEAL-HOUSING ITB R	1	SNA	
5.9-45	JC62-00326A	SEAL-WASTE SIDE	1	SNA	

Cartridge-Transfer Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.9-46	JC63-00857A	COVER-M-WASTE ITB	1	SNA	
5.9-47	JC63-00859A	COVER-M-WASTE EXIT	1	SNA	
5.9-48	JC63-00862A	COVER-M-HANDLE ITB	1	SNA	
5.9-49	JC63-01049A	SHEET-HOUSING ITB	1	SNA	
5.9-50	JC63-01110A	SHEET-BRACKET ITB	1	SNA	
5.9-51	JC63-01124A	SHEET-HOUSING ITB F	1	SNA	
5.9-52	JC63-01170A	SHEET-BLADE ITB	1	SNA	
5.9-53	JC66-01082A	ARM-M-BLADE ITB	1	SNA	
5.9-54	JC66-01083A	SHAFT-M-BELT WASTE	1	SNA	
5.9-55	JC66-01085A	SHAFT-M-AUGER ITB	1	SNA	
5.9-56	JC66-01087A	GEAR-AUGER ITB	1	SNA	
5.9-57	JC66-01131A	ROLLER-T1	1	SNA	
5.9-58	JC66-01314B	DRUM-ITB BELT	1	SNA	
5.9-59	JC68-10914D	LABEL(P)-SERIAL NO	1	SNA	
5.9-60	JC72-40332A	PMO-BUSHING_CHARGE	1	SNA	
5.9-61	JC73-00222A	RUBBER-BELT WASTE ITB	1	SNA	
5.9-62	JC97-02645A	MEA UNIT-BLADE ITB	1	SNA	
5.9-63	JC61-01500A	BRACKET-P-CLEANING ITB	1	SNA	
5.9-64	JC61-01673A	BLADE-CLEANING ITB	1	SNA	
5.9-65	JC97-02646A	MEA UNIT-ROLL DRV ITB	1	SNA	
5.9-66	6031-001547	WASHER-PLAIN	1	SNA	
5.9-67	6044-000125	RING-E	1	SNA	
5.9-68	JC61-01562A	GUIDE-M-DRIVE ITB	1	SNA	
5.9-69	JC66-01129A	ROLLER-DRIVE ITB	1	SNA	
5.9-70	JC66-01137A	GEAR-DRIVE ITB	1	SNA	
5.9-71	JC97-03003A	MEA UNIT-ROLLER IDLE	1	SNA	
5.9-73	JC61-01526A	GUIDE-M-BUSH IDL ITB R	1	SNA	
5.9-74	JC66-01130A	ROLLER-IDLE ITB	1	SNA	
5.9-75	JC97-03004A	MEA-GUIDE IDLE ITB	1	SNA	
5.9-76	JC61-02185A	GUIDE-BUSH IDLE L	1	SNA	
5.9-77	JC71-10322B	NPR-EARTH OPC	1	SNA	

5.10 Cartridge-Drum

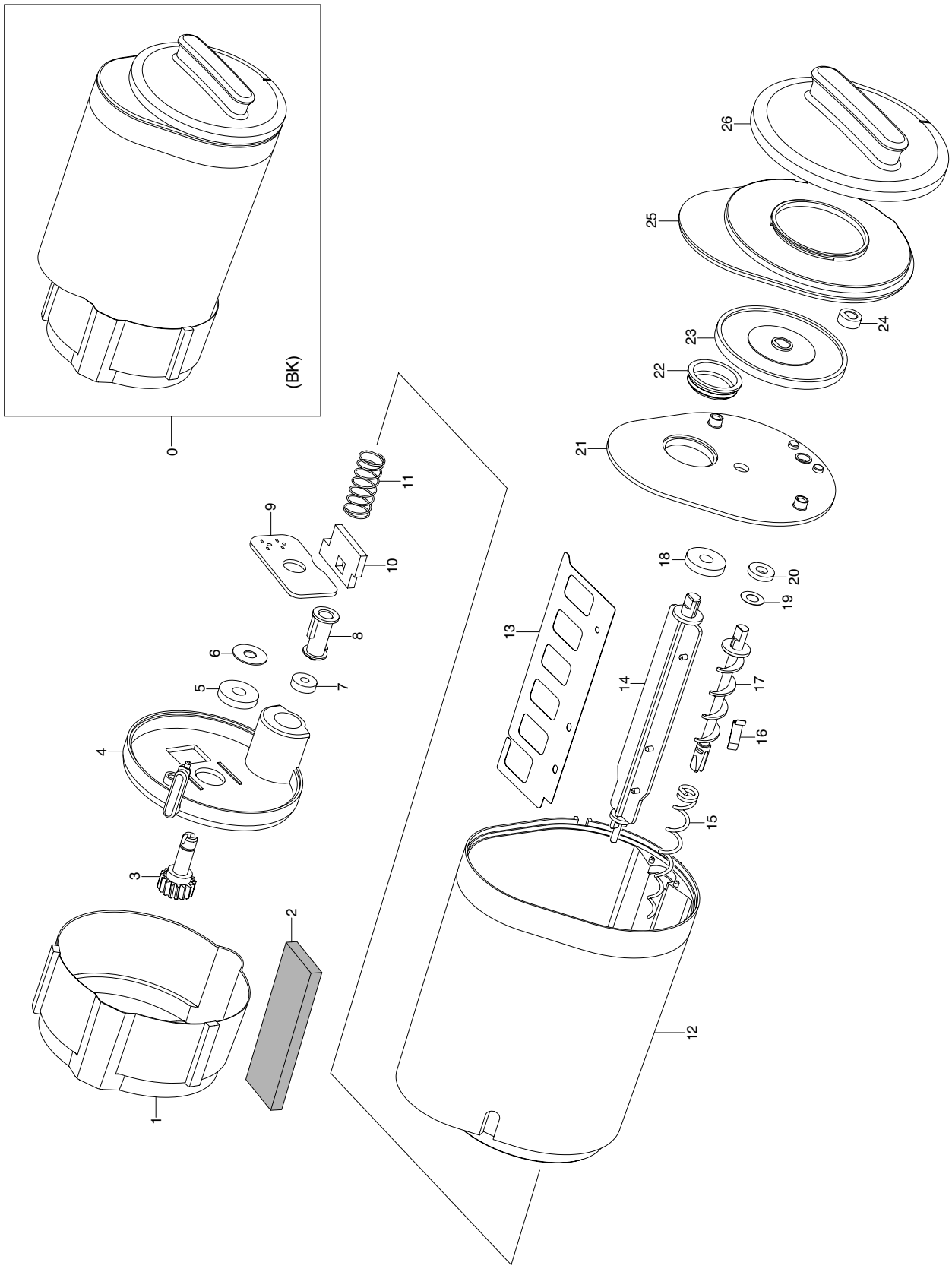


Cartridge-Drum Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.10-0	JC96-04760A	ELA UNIT-OPC DEV SET	1	SNA	
5.10-1	JC96-04728A	ELA UNIT-DEV_MAIN_SET	1	SNA	
5.10-2	JC69-01013A	CUSHION-DEVE	2	SNA	
5.10-3	JC67-00199A	CAP-DEVE	4	SA	
5.10-4	JC97-03031A	MEA UNIT-W_TONER_TANK	1	SNA	
5.10-5	JC97-02615D	MEA UNIT-DEV C	1	SNA	
5.10-6	JC97-02614D	MEA UNIT-DEV M	1	SNA	
5.10-7	JC97-02613D	MEA UNIT-DEV Y	1	SNA	
5.10-8	JC97-02616D	MEA UNIT-DEV K	1	SNA	
5.10-9	JC97-03076A	MEA UNIT-OPC SET	1	SNA	
5.10-10	6107-001292	SPRING-CS	1	SNA	
5.10-11	6003-000282	SCREW-TAPTITE	2	SNA	
5.10-12	6006-001078	SCREW-TAPTITE	2	SNA	

5.11 Toner BK

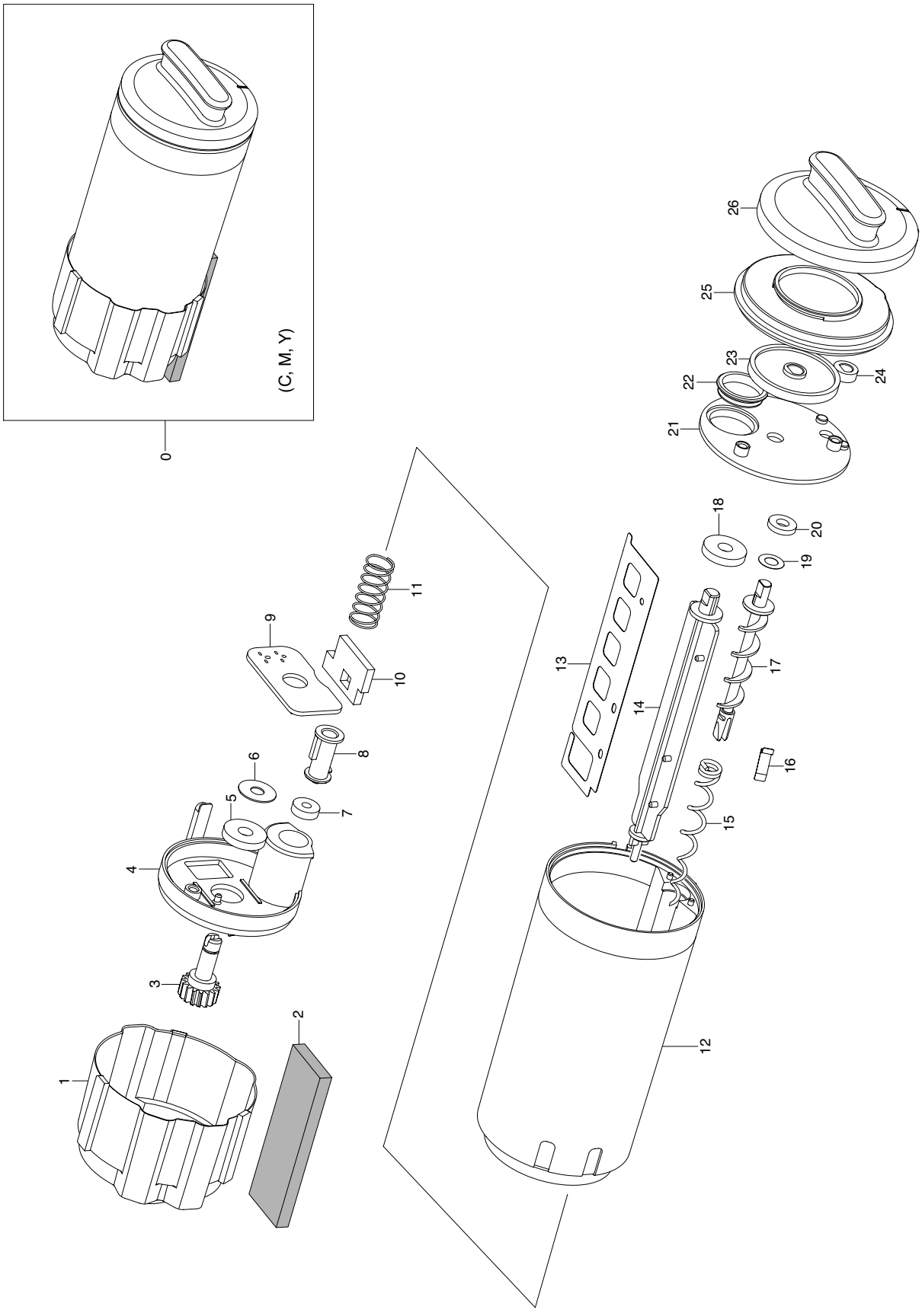


Toner BK Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.11-0	-	ELA UNIT-TONER TANK K	1	SNA	
5.11-1	JC67-00264A	CAP-BOTTLE BK	1	SNA	
5.11-2	JC72-01384A	SPONGE-CAP BOTTLE	1	SNA	
5.11-3	JC66-01095A	GEAR-AGITATOR BOTTLE	1	SNA	
5.11-4	JC67-00140A	CAP-M-CRUM BOTTLE BK	1	SNA	
5.11-6	6031-001577	WASHER-PLAIN	1	SNA	
5.11-8	JC64-00218A	SHUTTER-M-TONER BOTTLE	1	SNA	
5.11-9	-	TONER-CRUM	1	SNA	
5.11-10	JC63-01253A	SHEET-BOTTLE AUGER	1	SNA	
5.11-11	JC61-01677A	SPRING ETC-RETURN	1	SNA	
5.11-12	JC67-00259A	TANK-TONER BOTTLE BK	1	SNA	
5.11-13	JC63-01490A	SHEET-AGITATOR BK	1	SNA	
5.11-14	JC66-01591A	SHAFT-SPRING	1	SNA	
5.11-15	JC61-01676A	SPRING ETC-AUGER K	1	SNA	
5.11-17	JC66-01589A	SHAFT-AUGER	1	SNA	
5.11-21	JC63-01492A	COVER-INNER BK	1	SNA	
5.11-22	JG72-40960A	PMO-CAP TONER	1	SNA	
5.11-23	JC66-01139A	GEAR-AUGER A	1	SNA	
5.11-24	JC66-01141A	GEAR-AUGER Z15	1	SNA	
5.11-25	JC67-00260A	CAP-TONER BOTTLE BK	1	SNA	
5.11-26	JC64-00339A	HANDLE-BOTTLE BK	1	SNA	

5.12 Toner CMY

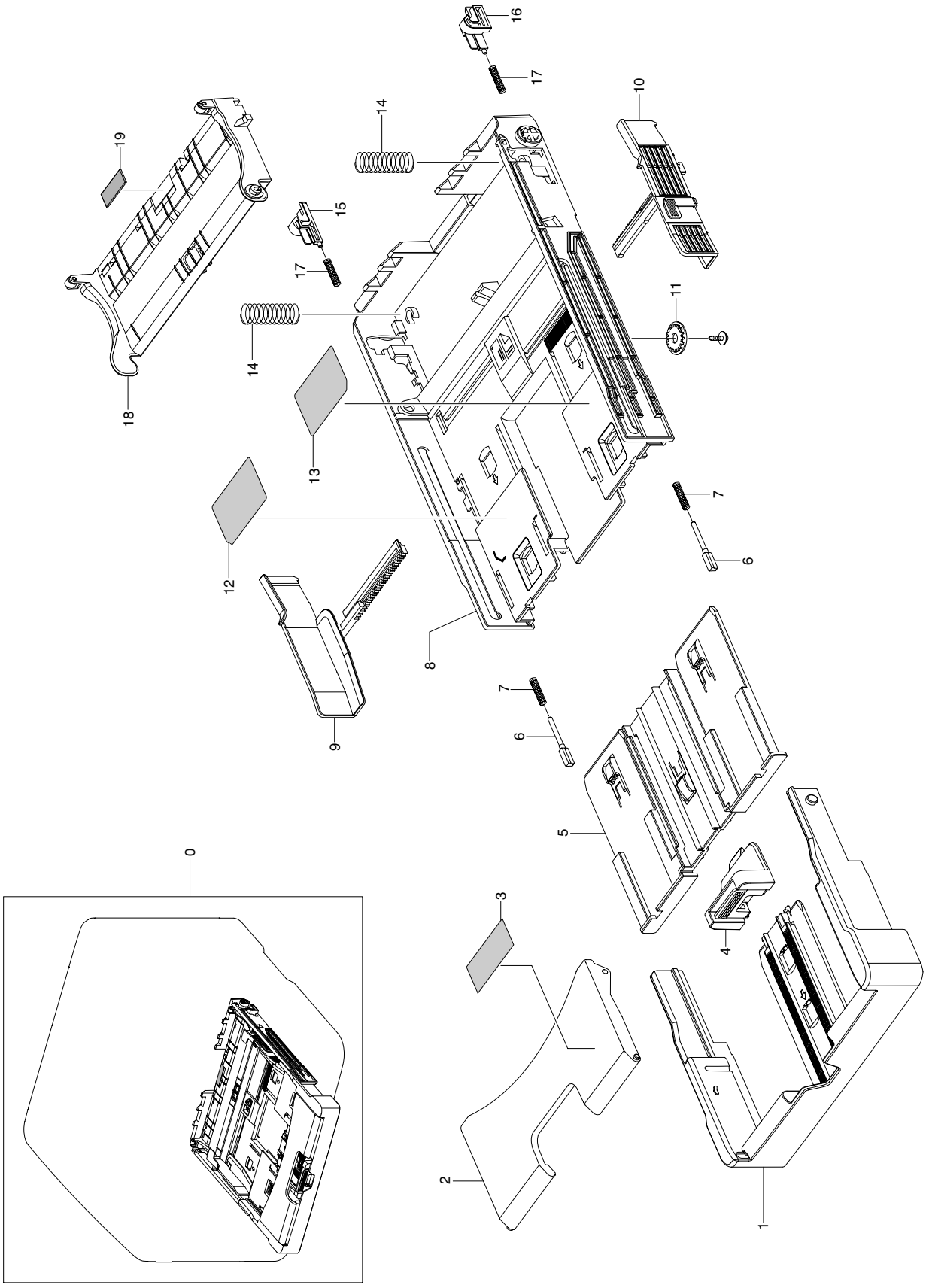


Toner CMY Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.12-0	-	ELA UNIT-TONER TANK C,M,Y	1	SNA	
5.12-1	JC67-00187A	CAP-BOTTLE	1	SNA	
5.12-2	JC72-01384A	SPONGE-CAP BOTTLE	1	SNA	
5.12-3	JC66-01095A	GEAR-AGITATOR BOTTLE	1	SNA	
5.12-4	JC67-00141A	CAP-M-CRUM BOTTLE	1	SNA	
5.12-6	6031-001577	WASHER-PLAIN	1	SNA	
5.12-8	JC64-00218A	SHUTTER-M-TONER BOTTLE	1	SNA	
5.12-9	-	TONER-CRUM	1	SNA	
5.12-10	JC63-01253A	SHEET-BOTTLE AUGER	1	SNA	
5.12-11	JC61-01677A	SPRING ETC-RETURN	1	SNA	
5.12-12	JC67-00258A	TANK-TONER BOTTLE	1	SNA	
5.12-13	JC63-01491A	SHEET-AGITATOR	1	SNA	
5.12-14	JC66-01591A	SHAFT-SPRING	1	SNA	
5.12-15	JC61-02391A	SPRING ETC-AUGER RU	1	SNA	
5.12-17	JC66-01589A	SHAFT-AUGER	1	SNA	
5.12-21	JC63-00894A	COVER-INNER	1	SNA	
5.12-22	JG72-40960A	PMO-CAP TONER	1	SNA	
5.12-23	JC66-01139A	GEAR-AUGER A	1	SNA	
5.12-24	JC66-01141A	GEAR-AUGER Z15	1	SNA	
5.12-25	JC67-00263A	CAP-TONER BOTTLE	1	SNA	
5.12-26	JC64-00340A	HANDLE-BOTTLE	1	SNA	

5.13 Cassette

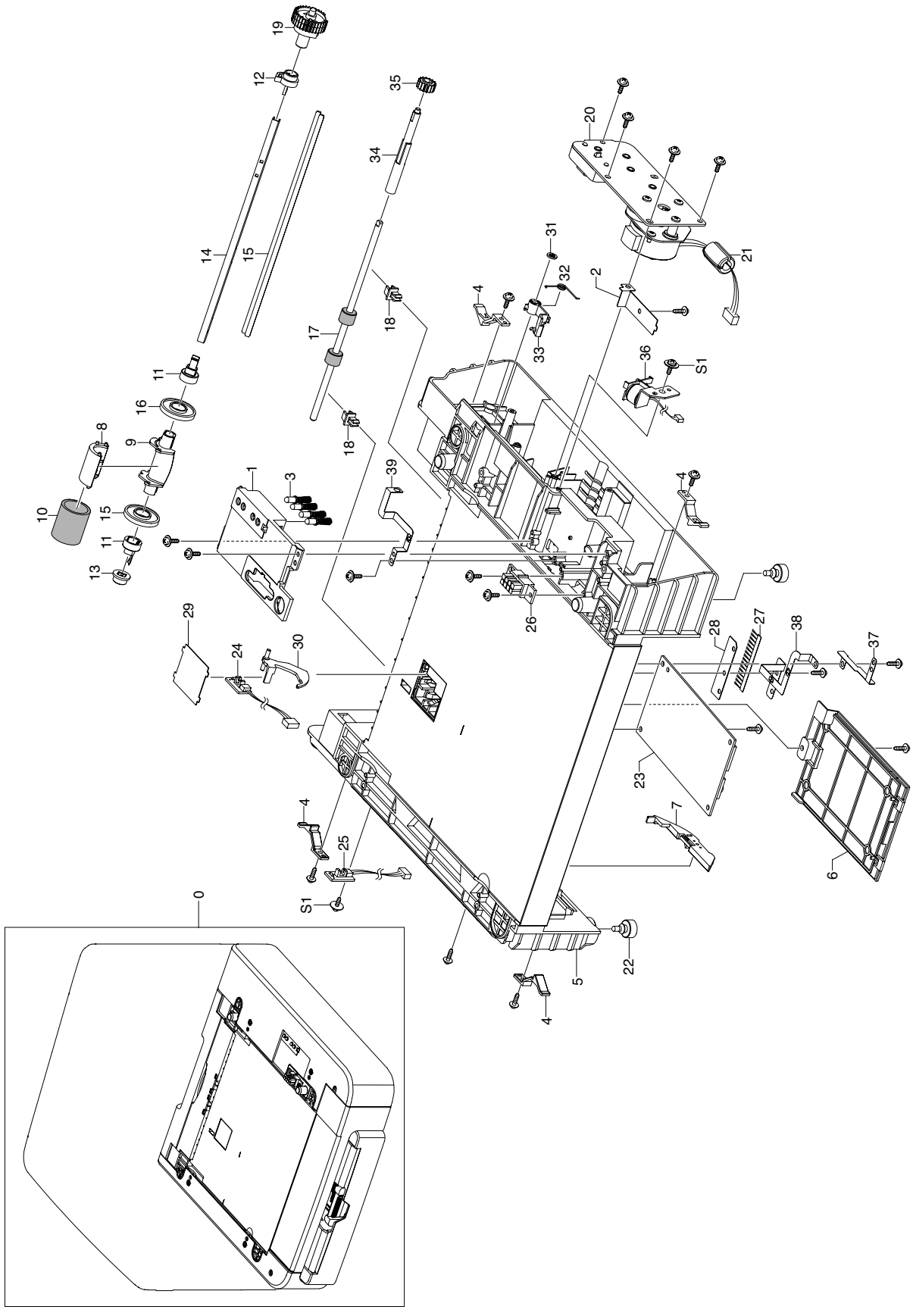


Cassette Parts List

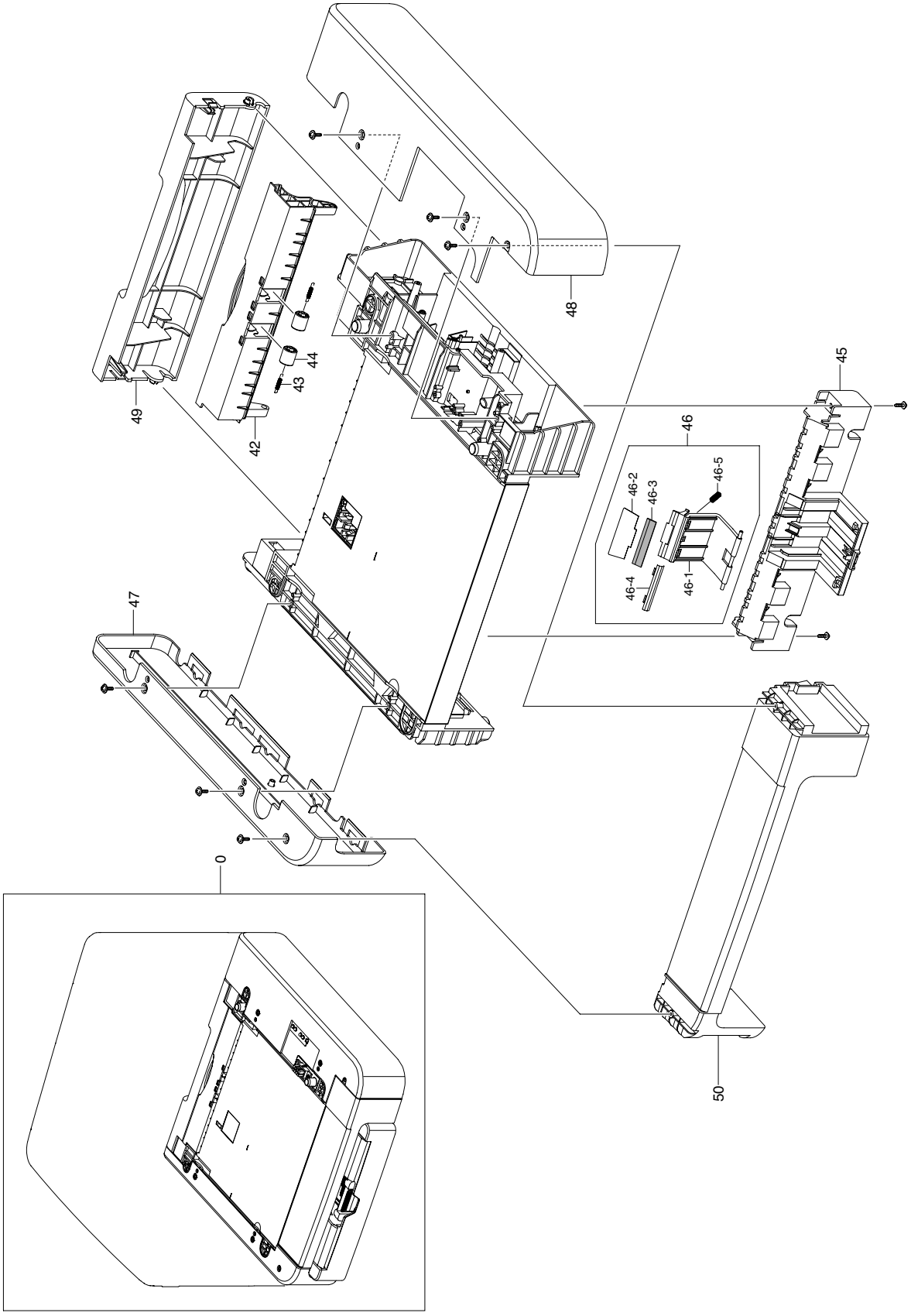
SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.13-0	JC97-02332D	MEA-UNIT CASSETTE	1	SA	
5.13-1	JC63-00869C	TRAY-EXTENSION SMALL	1	SNA	
5.13-2	JC63-00855A	COVER-M-CASSETTE	1	SA	
5.13-3	JC68-00780A	LABEL-WARNING	1	SNA	
5.13-4	JC61-01531A	STOPPER-PAPER REAR	1	SNA	
5.13-5	JC63-00872A	TRAY-M-EXIT CASSETTE	1	SNA	
5.13-8	JC61-01530C	FRAME-SEMI CASSETTE	1	SNA	
5.13-9	JC70-00516A	ADJUST-M-CASSETTE R	1	SA	
5.13-10	JC70-00517A	ADJUST-M-CASSETTE L	1	SA	
5.13-11	JG66-40003A	GEAR-PINION	1	SA	
5.13-12	JC68-01680A	LABEL-INSTRUCTION	1	SNA	
5.13-13	JF68-10532B	LABEL(P)-BAR CODE	1	SNA	
5.13-14	6107-001240	SPRING-CS	2	SNA	
5.13-15	JC64-00223A	LOCKER-M-KNOCK UP L	1	SA	
5.13-16	JC64-00222A	LOCKER-M-KNOCK UP R	1	SA	
5.13-17	JG61-70531A	SPRING ETC-LOCKER,PLATE	2	SA	
5.13-18	JC61-01158A	PLATE-M-KNOCK_UP	1	SA	

5.14 SCF-Frame 1



SCF-Frame 2



SCF-Frame Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

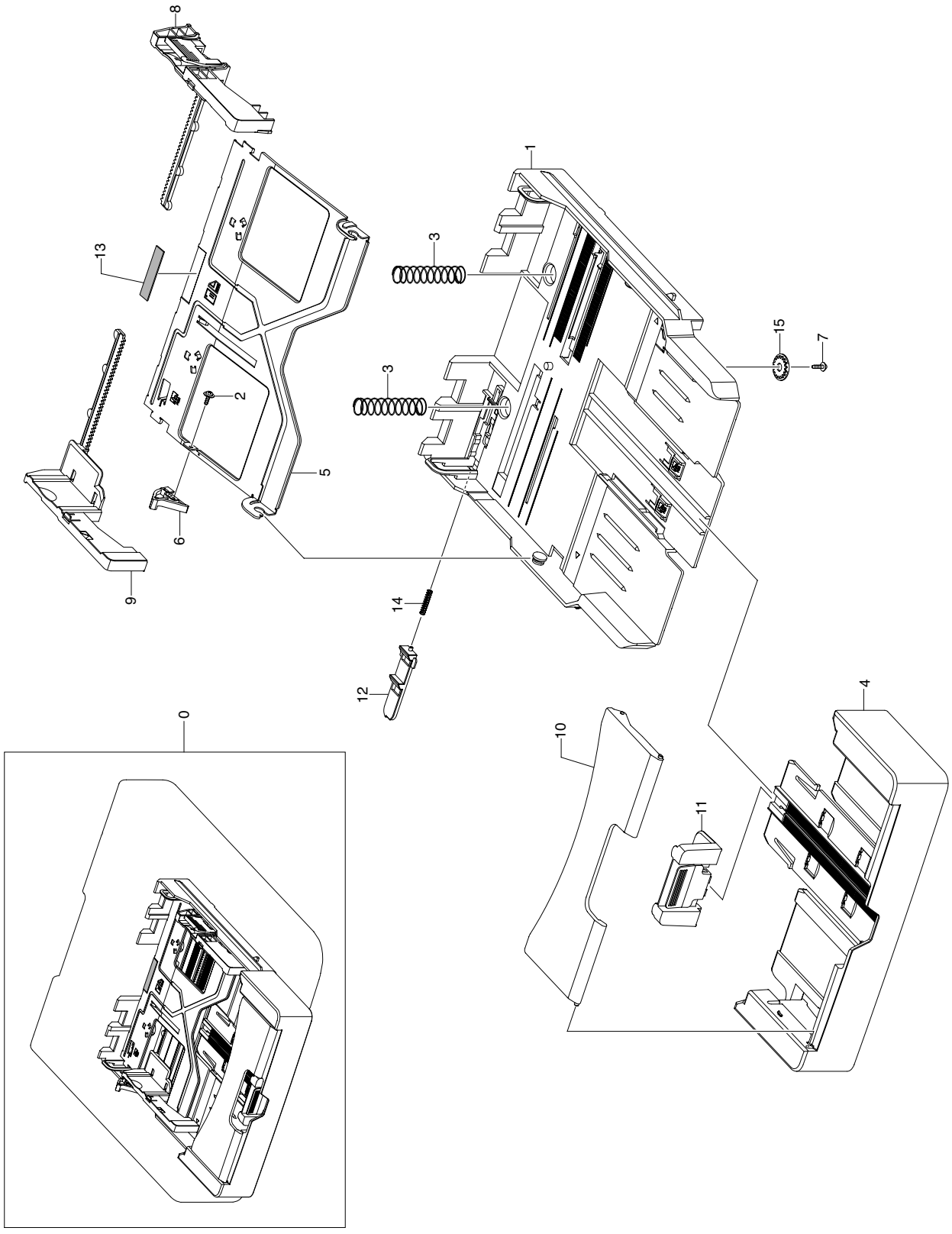
Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.14-0	JC96-04309A	ELA HOU-FRAME SCF	1	SNA	
5.14-1	JC63-01032A	COVER-M-GROUND	1	SA	
5.14-2	JC61-01661A	PLATE-P-COVER	1	SA	
5.14-3	JC97-02812A	MEA UNIT-TERMINAL GND	4	SA	
5.14-4	JC72-00983A	PMO-LOCKER CST	4	SA	
5.14-5	JC61-01666A	FRAME-M SCF	1	SNA	
5.14-6	JC63-00492A	COVER-M-SIMM R2	1	SA	
5.14-7	JC61-00937A	GUIDE-M-KNOCK UP	1	SA	
5.14-8	JC61-00909A	HOUSING-M-PICK UP_R2	1	SA	
5.14-9	JC61-00910A	HOUSING-M-PICK UP2_R2	1	SA	
5.14-10	JC72-01231A	SPONGE-ROLLER PICK_UP	1	SA	
5.14-11	JC61-00915A	STOPPER-M-PICK UP_R2	2	SA	
5.14-12	JC61-00586A	BUSH-M-PICK_UP L	1	SA	
5.14-13	JC61-00587A	BUSH-M-PICK_UP R	1	SA	
5.14-14	JC66-00399A	SHAFT-P-PICK_UP	1	SA	
5.14-15	JC66-00720A	SHAFT-P-CORE	2	SA	
5.14-16	JC72-00982A	PMO-IDLE PICK_UP	2	SA	
5.14-17	JC66-00598A	ROLLER-FEED	1	SA	
5.14-18	JC72-00382B	PMO-BUSHING FEED	2	SA	
5.14-19	JC97-02741A	MEA UNIT-GEAR PICKUP	1	SA	
5.14-20	JC96-03003A	ELA HOU-MOTOR SCF	1	SA	
5.14-21	3301-001635	CORE-FERRITE	1	SNA	
5.14-22	JC61-40001A	FOOT-ML80	2	SA	
5.14-23	JC92-01832A	PBA SUB-SCF	1	SA	
5.14-24	JC92-01799A	PBA SUB-SCF_EMP	1	SA	
5.14-25	JC92-01800A	PBA SUB-SCF_OPEN	1	SA	
5.14-26	JC39-00102A	CBF HARNESS-SCF_8P	1	SA	
5.14-27	JC67-00201A	BRUSH-ANTISTATIC_SCF	1	SNA	
5.14-28	JC63-00527A	SHEET-BRUSH	1	SA	
5.14-29	JC63-00369A	SHEET-COVER SENSOR	1	SA	
5.14-30	JC72-00975A	PMO-ACTUATOR EMPTY	1	SA	
5.14-31	6044-000001	RING-CS	1	SNA	
5.14-32	6107-001170	SPRING-TS	1	SA	
5.14-33	JC66-00377A	CAM-M-PICK_UP	1	SA	
5.14-34	JC66-01214A	SHAFT-M-FEED	1	SA	
5.14-35	JC66-00394A	GEAR-FEED 2	1	SA	
5.14-36	JC33-00010C	SOLENOID-SCF	1	SA	
5.14-37	JC63-01039A	GROUND-P-PBA	1	SNA	
5.14-38	JC63-01040A	GROUND-P-FEED_ROLL	1	SA	
5.14-39	JC63-01041A	GROUND-P-DRIVE	1	SNA	
5.14-40	6003-000196	SCREW-TAPTITE	19	SNA	
5.14-41	6006-001078	SCREW-TAPTITE	2	SNA	
5.14-42	JC63-01031A	COVER-M-JAM	1	SA	

SCF-Frame Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.14-43	6107-001047	SPRING-ES	2	SA	
5.14-44	JC66-00529A	ROLLER-M-IDLE FEED	2	SA	
5.14-45	JC61-01657A	GUIDE-M-PICK UP	1	SA	
5.14-46	JC61-00580A	HOLDER-M-PAD	1	SA	
5.14-47	JC63-00290A	SHEET-HOLDER PAD	1	SA	
5.14-48	JC73-00140A	RPR-FRICTION PAD	1	SA	
5.14-49	JC70-00314A	IPR-PLATE PAD	1	SA	
5.14-50	JC61-70911A	SPRING ETC-EXIT ROLL FD	1	SA	
5.14-51	JC63-01033A	COVER-M-LEFT SCF	1	SA	
5.14-52	JC63-01034A	COVER-M-RIGHT SCF	1	SA	
5.14-53	JC63-01035A	COVER-M-REAR SCF	1	SA	

5.15 SCF Cassette



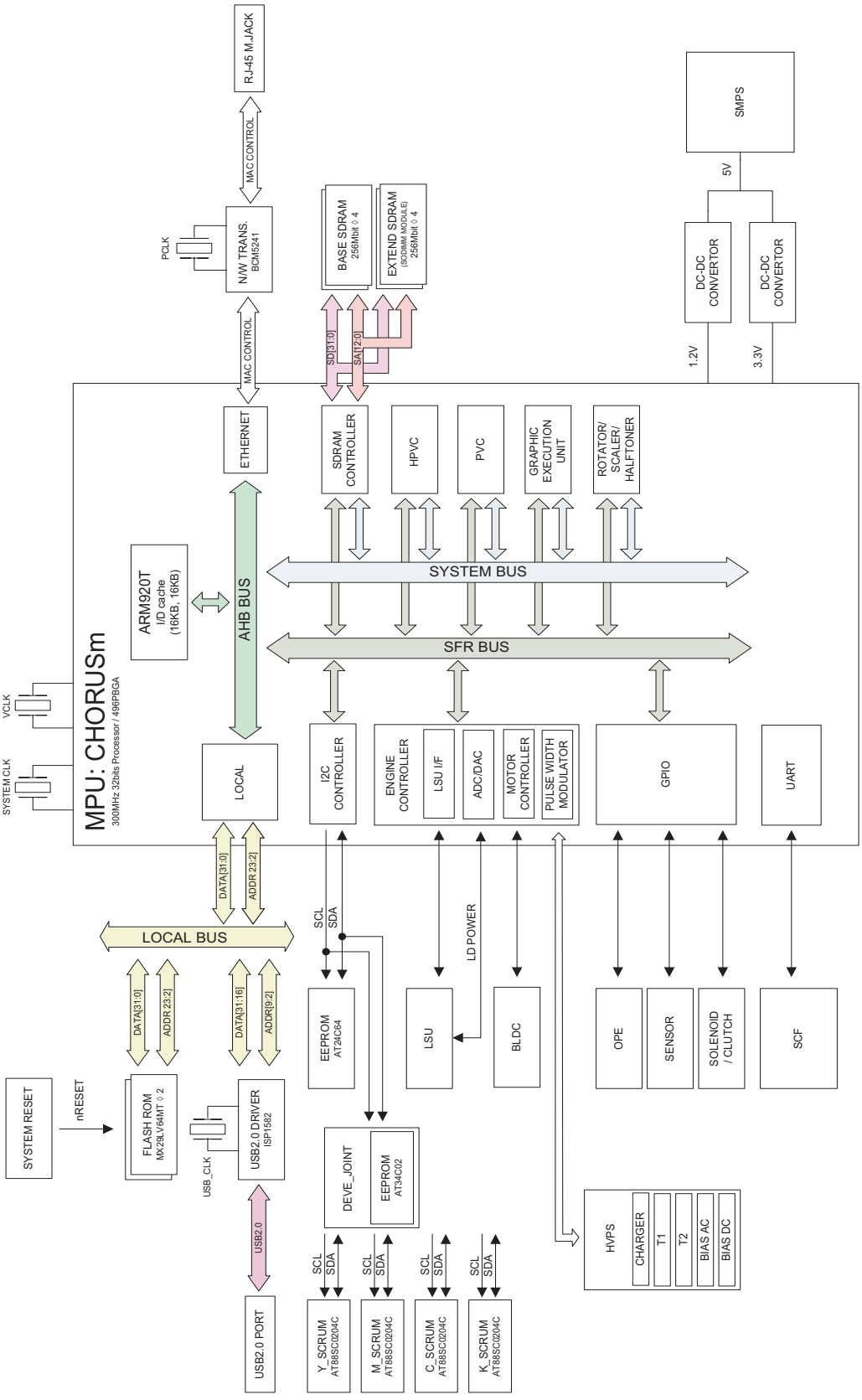
SCF Cassette Parts List

SA : SERVICE AVAILABLE, SNA : SERVICE not AVAILABLE

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.15-0	JC97-02742C	MEA UNIT-CASSETTE	1	SA	
5.15-1	JC61-01658C	FRAME-CASSETTE SCF	1	SNA	
5.15-2	6003-000269	SCREW-TAPTITE	1	SA	
5.15-3	6107-001166	SPRING-CS	2	SA	
5.15-4	JC63-01036C	COVER-FRONT SCF	1	SA	
5.15-5	JC61-01662A	PLATE-P-KNOCKUP SCF	1	SA	
5.15-6	JC66-00719A	CAM-M-KNOCK UP	1	SA	
5.15-7	6003-000264	SCREW-TAPTITE	1	SNA	
5.15-8	JC70-00523A	ADJUST-M-SCF R	1	SA	
5.15-9	JC70-00524A	ADJUST-M-SCF L	1	SA	
5.15-10	JC63-00855A	COVER-M-CASSETTE	1	SA	
5.15-11	JC61-01664A	GUIDE-M REAR SCF	1	SA	
5.15-12	JC72-00972A	PMO-PLATE_LOCKER	1	SA	
5.15-13	JC73-00141A	RPR-PAD CASSETTE	1	SA	
5.15-14	JG61-70531A	SPRING ETC-LOCKER,PLATE	1	SA	
5.15-15	JG66-40003A	GEAR-PINION	1	SA	

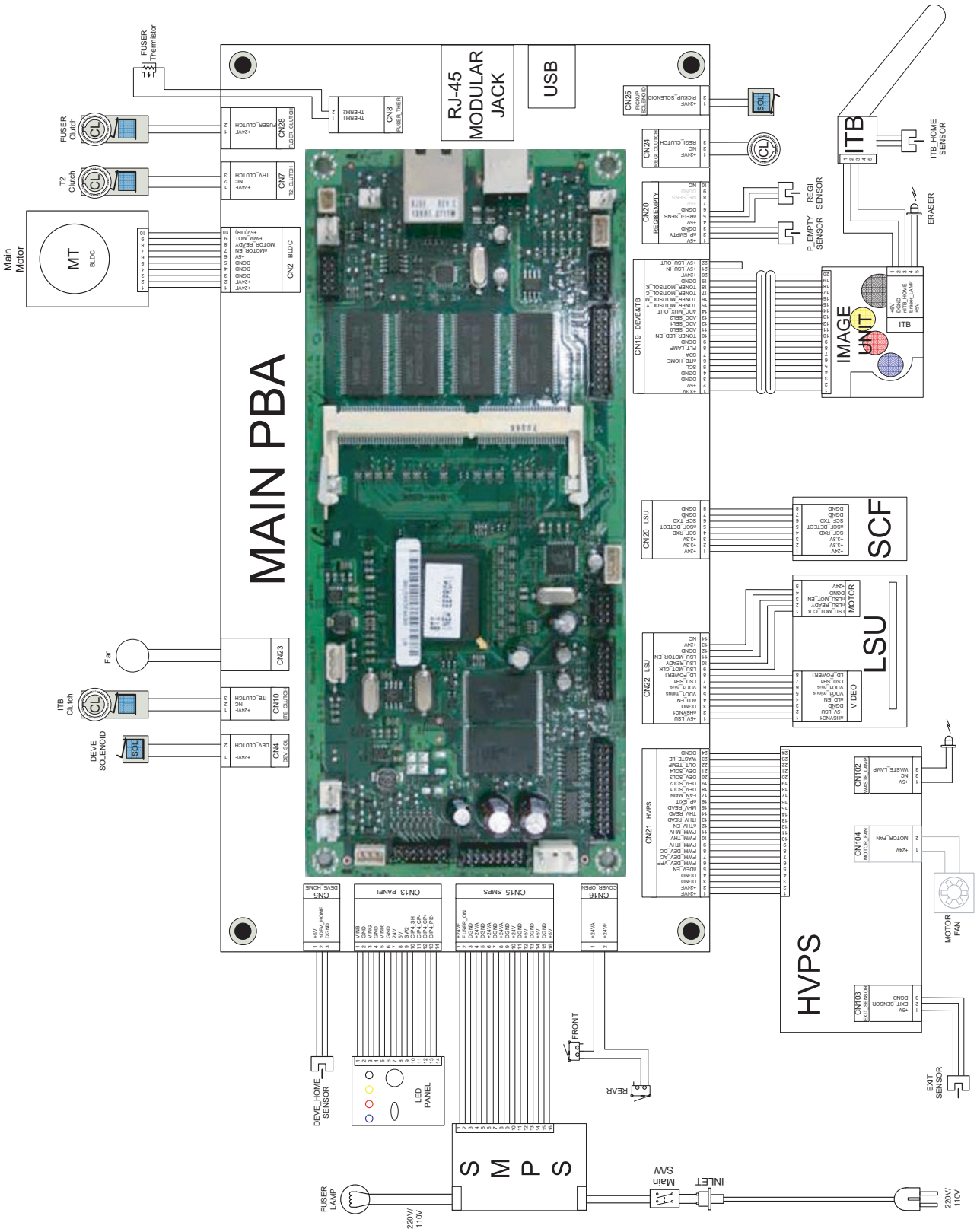
6. System Diagram

6.1 Block Diagram

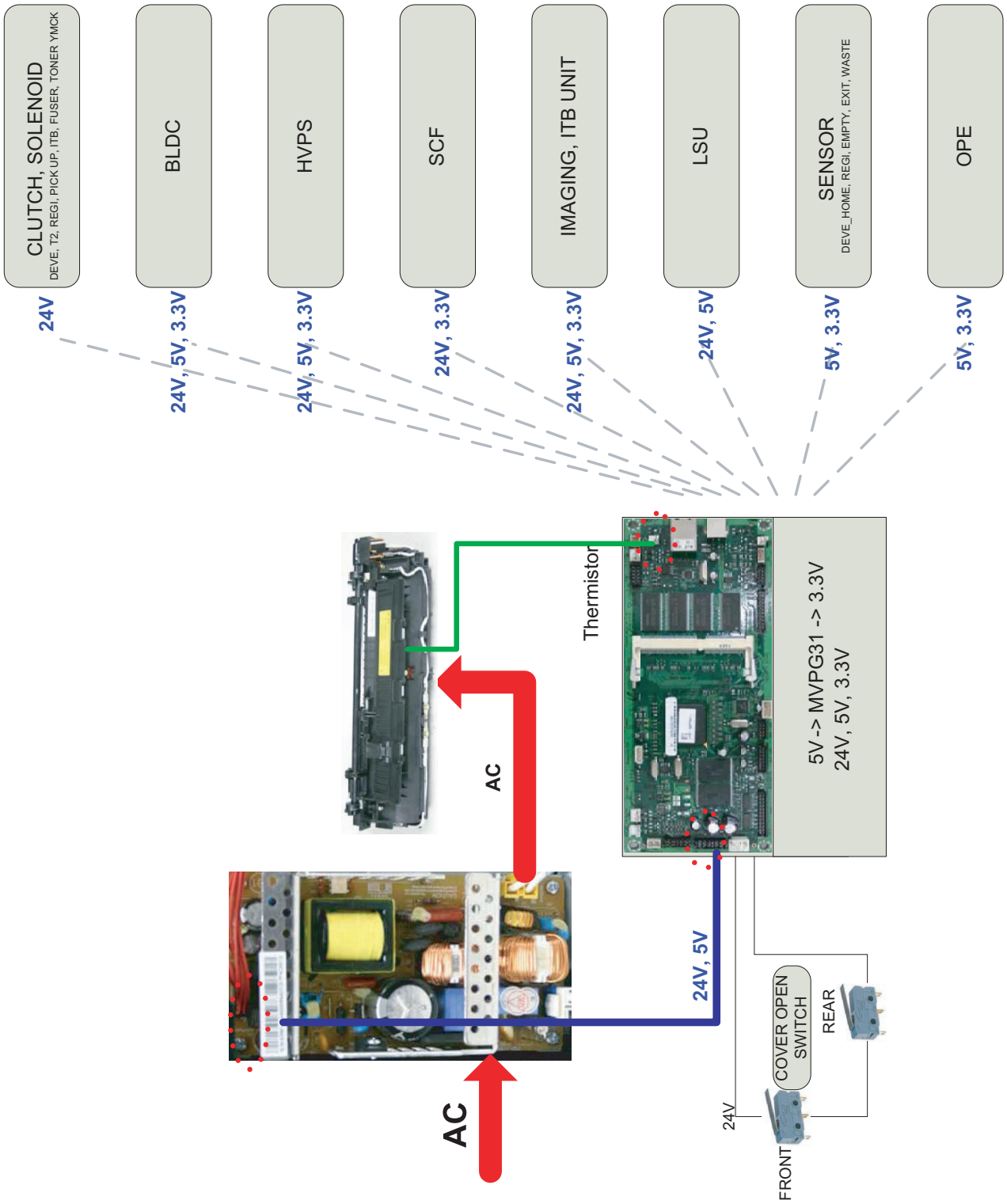


6.2 Connection Diagram

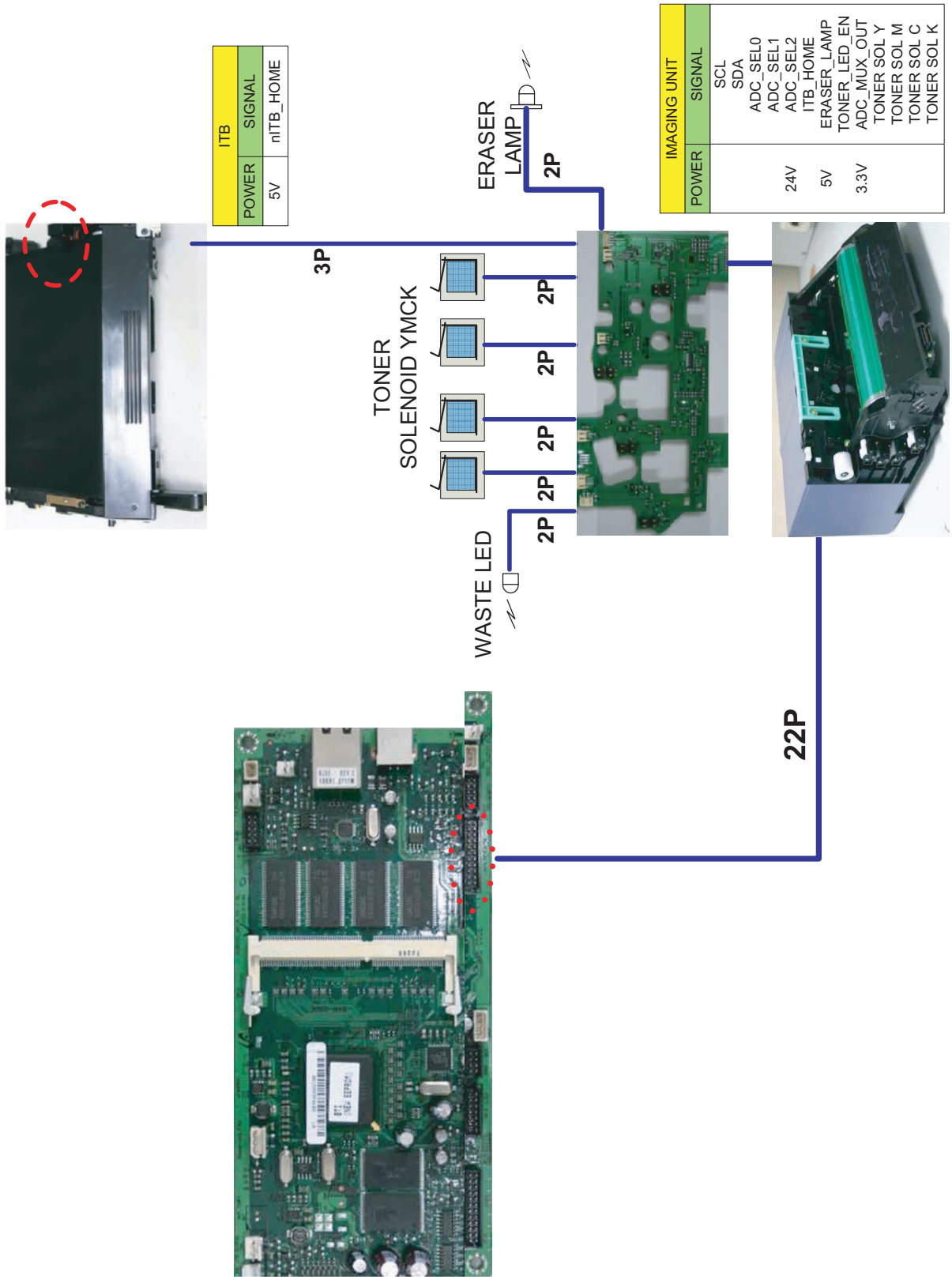
6.2.1 Main Layout



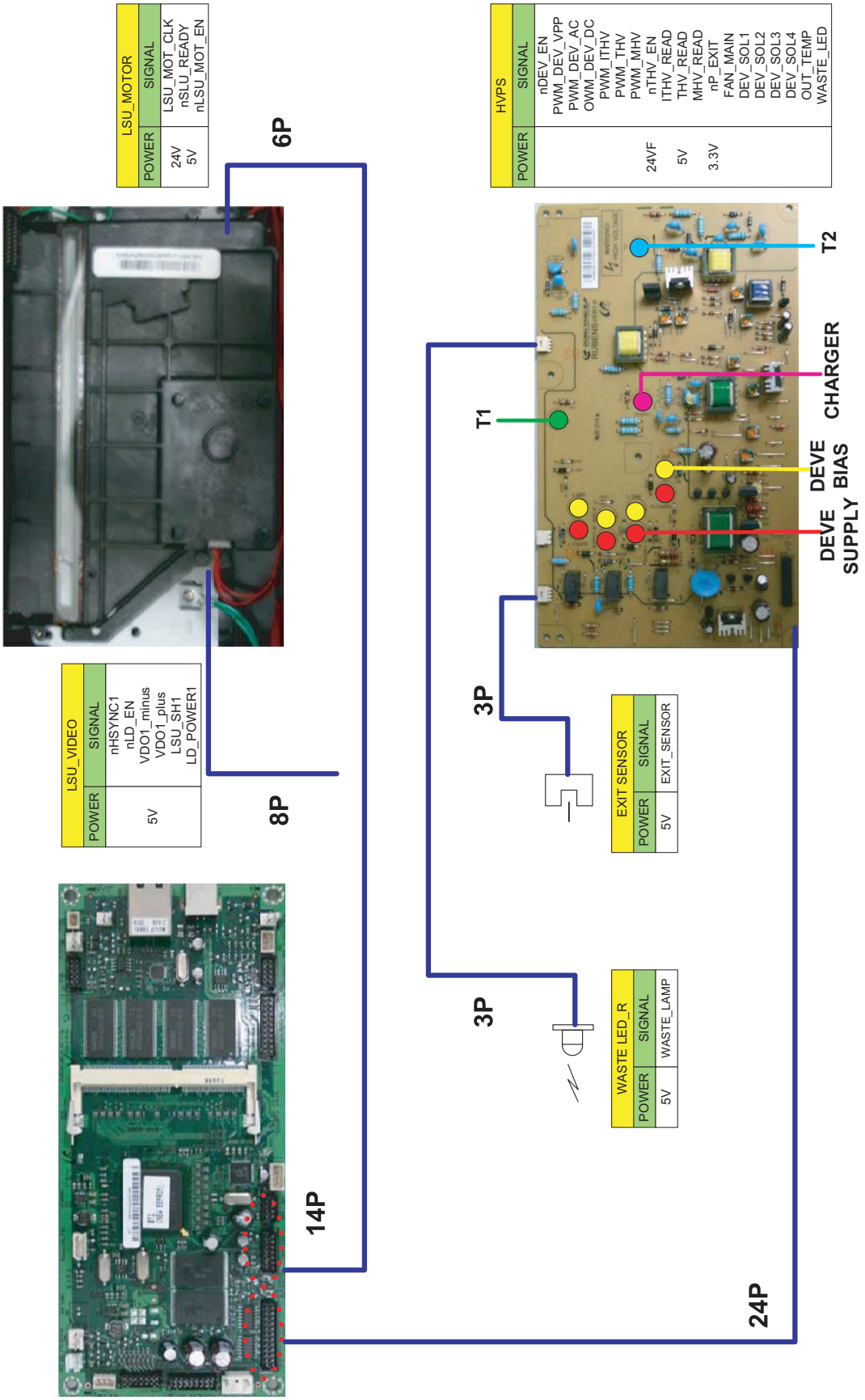
6.2.2 Power


CLUTCH, SOLENOID
DEVE, T2, REGI, PICK UP, ITB, FUSER, TONER YMCK
BLDC
HVPS
SCF
IMAGING, ITB UNIT
LSU
SENSOR
DEVE_HOME, REGI, EMPTY, EXIT, WASTE
OPE
24V
24V, 5V, 3.3V
24V, 5V, 3.3V
24V, 3.3V
24V, 5V, 3.3V
24V, 5V
5V, 3.3V
5V, 3.3V
Thermistor
5V -> MVPG31 -> 3.3V
24V, 5V, 3.3V
AC
24V, 5V
AC
COVER OPEN SWITCH
REAR
FRONT
24V

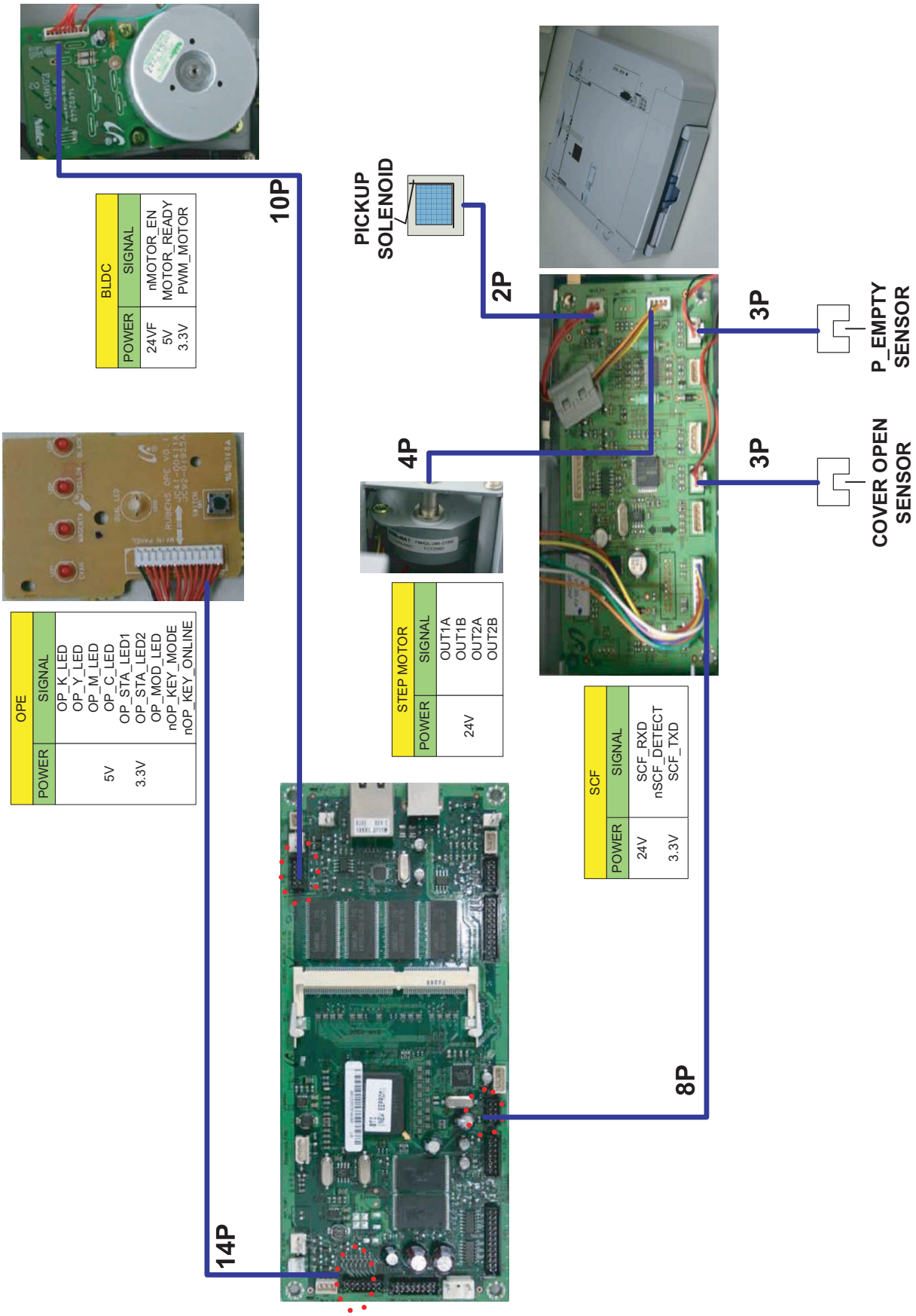
6.2.3 Imaging, ITB Unit



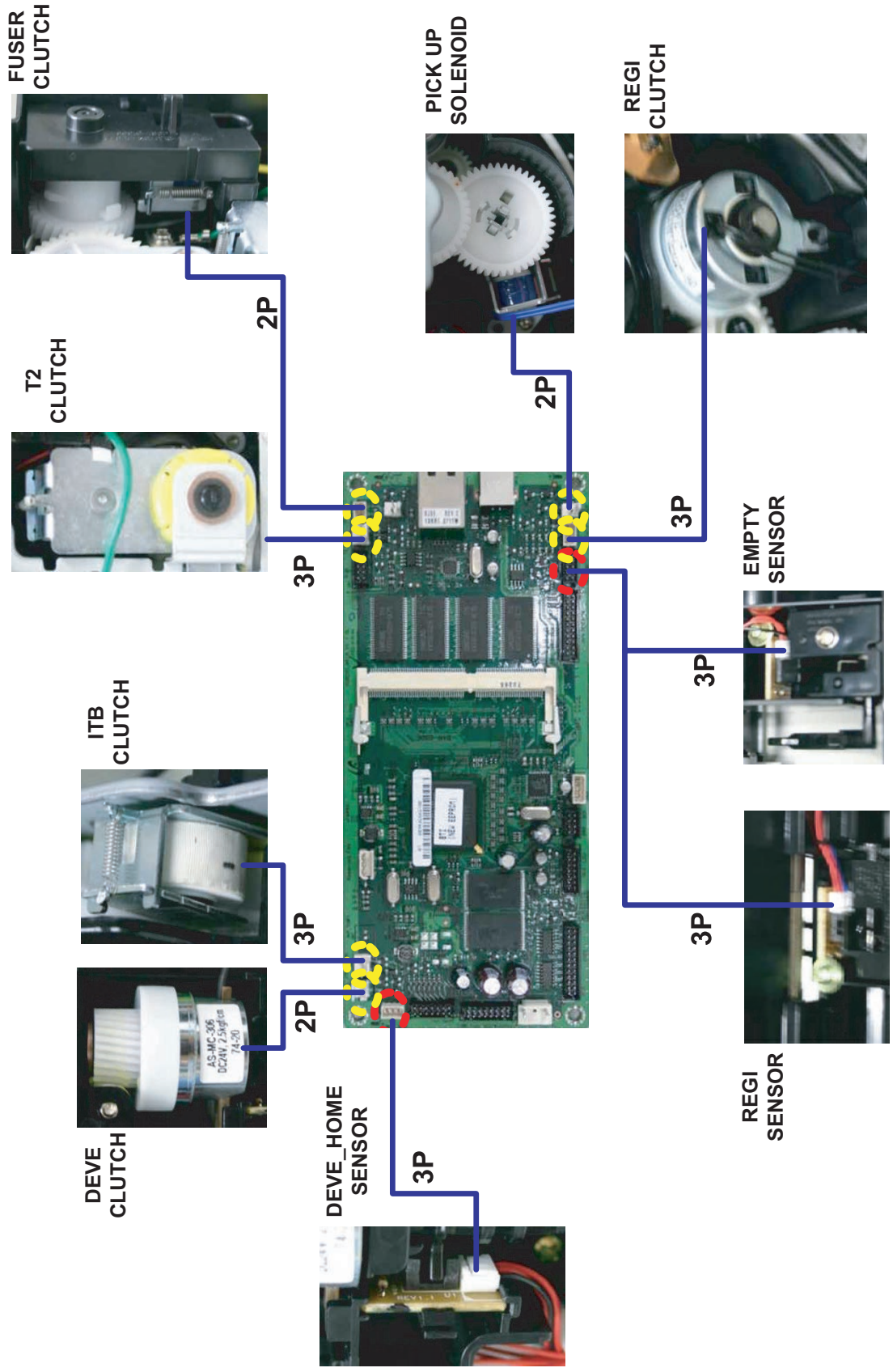
6.2.4 HVPS, LSU


LSU_MOTOR
POWER
SIGNAL
24V
5V
LSU_MOT_CLK
nSLU_READY
nLSU_MOT_EN
6P
HVPS
POWER
SIGNAL
24VF
5V
3.3V
nDEV_EN
PWM_DEV_VPP
PWM_DEV_AC
OWM_DEV_DC
PWM_ITHV
PWM_THV
PWM_MHV
nTHV_EN
ITHV_READ
THV_READ
MHV_READ
nP_EXIT
FAN_MAIN
DEV_SOL1
DEV_SOL2
DEV_SOL3
DEV_SOL4
OUT_TEMP
WASTE_LED
T2
CHARGER
T1
DEVE BIAS
DEVE SUPPLY
LSU_VIDEO
POWER
SIGNAL
5V
nHSYNC1
nLD_EN
VDO1_minus
VDO1_plus
LSU_SH1
LD_POWER1
8P
3P
EXIT SENSOR
POWER
SIGNAL
5V
EXIT_SENSOR
3P
WASTE LED_R
POWER
SIGNAL
5V
WASTE_LAMP
14P
24P

6.2.5 SCF, OPE, BLDC



6.2.6 Sensor, Clutch, Solenoid



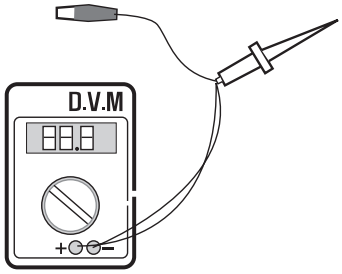
7. Reference Information

This chapter contains the tools list, list of abbreviations used in this manual, and a guide to the location space required when installing the printer. A definition of tests pages and Wireless Network information definition is also included.

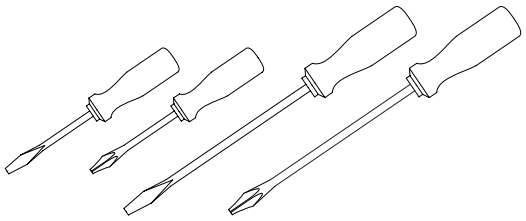
7.1 Tools for Troubleshooting

The following tools are recommended safe and easy troubleshooting as described in this service manual.

- **DVM(Digital Volt Meter)**
  Standard : Indicates more than 3 digits.



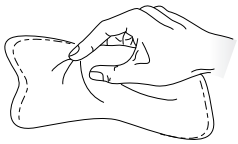
- **Driver**
  Standard : "-" type, "+" type (M3 long, M3 short, M2 long, M2 short).



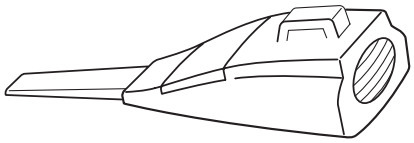
- **Tweezers**
  Standard : For general home use, small type.

- **Cotton Swab**
  Standard : For general home use, for medical service.

- **Cleaning Equipments**
  Standard : An IPA(Isopropyl Alcohol)dry wipe tissue or a gentle neutral detergent and lint-free cloth.

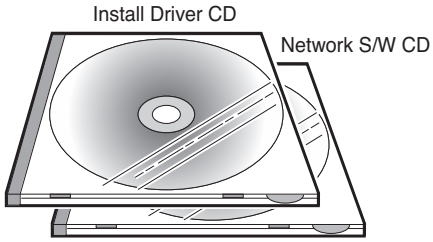


- **Vacuum Cleaner**



- **Brush**

- **Software (Driver) installation CD ROM**



7.2 Acronyms and Abbreviations

The table below explains the abbreviations and acronyms used in this service manual. Where abbreviations or acronyms are used in the text please refer to this table.

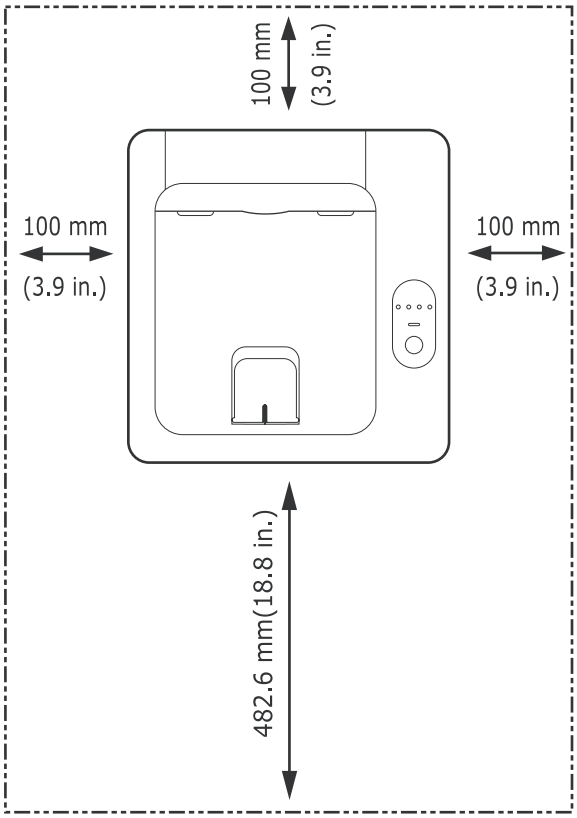
ADC	Analog-to-Digital-Conversion
AP	Access Point
AC	Alternating Current
ASIC Circuit	Application Specific Integrated
ASSY	Assembly
BIOS	Basic Input Output System
BLDC Motor	Brushless DC Motor
CLBP	Color Laser Beam Printer
CMOS	Complementary Metal Oxide Semiconductor
CMYK	Cyan, Magenta, Yellow, Black
CN	Connector
CON	Connector
CPU	Central Processing Unit
CTD Sensor	Color Toner Density Sensor
dB	Decibel
dBA	A-Weighted decibel
dBm	Decibel milliwatt
DC	Direct Current
DCU	Diagnostic Control Unit
DIMM	Dual In-line Memory Module
DPI	Dot Per Inch
DRAM	Dynamic Random Access Memory
DVM	Digital Voltmeter
ECP	Enhanced Capability Port
ECU	Engine Control Unit
EEPROM	Electronically Erasable Programmable Read Only Memory
EMI	Electro Magnetic Interference
EP	Electro photographic
EPP	Enhanced Parallel Port
F/W	Firmware
FCF/FCT	First Cassette Feeder/First Cassette Tray
FISO	Front-In, Side-Out
FPOT	First Print out Time
GDI	Windows Graphic Device Interface
GIF	Graphic Interchange Format
GND	Ground
HBP	Host Based Printing
HDD	Hard Disk Drive
HTML	Hyper Text Transfer Protocol
HV	High Voltage
HVPS	High Voltage Power Supply
I/F	Interface
I/O	Input and Output
lb	Pound(s)
IC	Integrated Circuit
ICC	International Color Consortium
IDE	Intelligent Drive Electronics or Integrated Drive Electronics
IEEE	Institute of Electrical and Electronics Engineers. Inc
IOT	Image Output Terminal (Color printer, Copier)
IPA	Isopropy Alcohol
IPC	Inter Process CommunicationEPP Enhanced parallel Port
IPM	Images Per Minute
ITB	Image Transfer Belt
LAN	local area network
LBP	Laser Beam Printer

LCD	Liquid Crystal Display
LED	Light Emitting Diode
LSU	Laser Scanning Unit
MB	Megabyte
MHz	Megahertz
MPBF	Mean Prints Between Failure
MPF/MPT	Multi Purpose Feeder/Multi Purpose Tray
NIC	Network Interface Card
NPC	Network Printer Card
NVRAM	Nonvolatile Random Access Memory
OPC	Organic Photo Conductor
PBA	Printed Board Assembly
PCL	Printer Command Language , Printer Control Language
PCI	Peripheral Component Interconnect by Intel 1992/6/22, is a local bus standard developed by Intel and introduced in April, 1993 : A60, B60 Pins
PCL5Ce	Printer Command Language 5Ce-Color
PCL6	Printer Command Language 6
PDF	Portable Document Format
PDL	Page Description Language
Ping	Packet internet or Inter-Network Groper
PPD	Postscript Printer Discription
PPM	Page Per Minute
PS	Post Script
PS3	Post Script Level3
PTL	Pre-Transfer Lamp
PTB	Paper-Transfer Belt
PWM	Pulse Width Moduration
Q'ty	Quantity
RAM	Random Access Memory
RCP	Remote Control Panel
ROM	Read Only Memory
SCF/SCT	Second Cassette Feeder/Second Cassette Tray
SMPS	Switching Mode Power Supply
SPGP	Samsung Printer Graphic Processor
SPL	Samsung Printer Language
SPL-C	Samsung Printer Language-Color
Spool	Simultaneous Peripheral Operation Online
SRS	Software Requirment Specification
SURF	Surface Rapid Fusing
SW	Switch
sync	Synchronous or Synchronization
T1	ITB
T2	Transfer Roller
TRC	Toner Reproduction Curve
PnP	Universal Plug and Play
U.I.	User Interface
URL	Uniform Resource Locator
USB	Universal Serial Bus
VCCI	Voluntary Control Council for Interference Information Technology Equipment
WECA Alliance	Wireless Ethernet Compatibility
Wi-Fi	Wireless Fidelity

7.3 Select a location for the printer

• Leave enough room to open the printer trays, covers, and allow for proper ventilation. (see diagram below)

• Provide the proper environment :
- A firm, level surface
- Away from the direct airflow of air conditioners, heaters, or ventilators
- Free of extreme fluctuations of temperature, sunlight, or humidity
- Clean, dry, and free of dust



7.4 A4 ISO 19752 Standard Pattern

This test page is reproduced at 70% of the normal A4 size

ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ
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Stephen J. Singel
Labanda Sinpat Abarress
Tendar, BSF
URANGLE

LSA
Funtres Solber Netener

23 January 2004

Jonathan Q. Maderia

Inpert Mampem Abaress
2343 Stantin Dawer Lank
Benhibe, SDF

Mr.Maderia:

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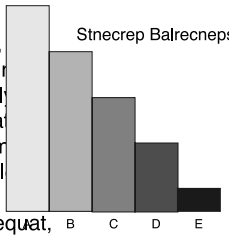

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FINAL

ELECTRONICS

GSPN (Global Service Partner Network)

North America : service.samsungportal.com
Latin America : latin.samsungportal.com
CIS : cis.samsungportal.com
Europe : europe.samsungportal.com
China : china.samsungportal.com
Asia : asia.samsungportal.com
Mideast & Africa : mea.samsungportal.com

ⓒ Samsung Electronics Co.,Ltd. Sep. 2007
Printed in Korea.
VERSION NO. : 1.00 **CODE** : 0350-C0XAA